

WRITING STATS-BASED CHOICE GAMES

Stephen Granade

Photo by Zach Reiner (@_zachreinier) on Unsplash

I'm Stephen Granade. I write interactive narratives and traditional fiction. I think choice-based games are awesome, and am excited to talk to y'all about writing stats-based games, focusing on Choice of Games's Choicescript language.

First of all, why write them?

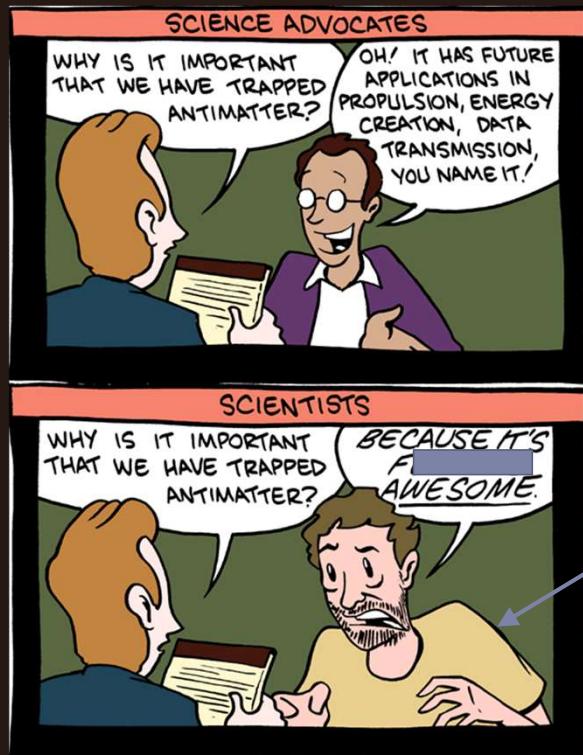
STEPHEN TRIES TO CONVINCE YOU TO WRITE STATS-BASED CHOICE GAMES

- As an author, you can provide readers/players experiences that are unlike those in traditional prose
- Readers/players can have greater feelings of agency as well as complicity*
- Story beats differ from static prose (“movies aren’t filmed plays”)
- Will stretch how you think of your traditional prose
- You can get paid!

* Not universally agreed on (as if any of my claims are)

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For me, interactive stories have qualitative differences from traditional prose. A lot of discussion of choice games focus on agency -- that is, you the reader get to exert your will on the world of the story -- but you also can have greater complicity, where the reader feels that they caused what happened, and may in fact refuse to continue a game because of the fictive actions they're being asked to do. The beats of a choice game differ from prose, something I'll get into later. It can inform your prose. And you can get paid! Mainly, though, this comic sums up why I think you should write choice games.



Me on interactive stories

Zach Weinersmith, "Saturday Morning Breakfast Cereal", <https://www.smbc-comics.com/comic/2010-12-09>

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WHAT IS A STATS-BASED CHOICE GAME?

4

To make sure we're all on the same page, let's break down what I mean by a stats-based choice game in general.

Reader interacts by making a choice

The screenshot shows a game interface titled "Fate of the Storm Gods" by Bendi Barrett. Below the title are links for "About", "More Games", "Blog", and "Subscribe". A navigation bar includes "Show Stats", "Restart", "Achievements", and "Settings". The main text describes a character's fall through the air, mentioning training at an atelier. Below this is a list of four options, each preceded by a radio button:

- "I can't believe there's so much sky."
- "Am I going to survive this?!"
- "Faster!"
- "I'm not the first to do this. I can do this."

A large "Next" button is at the bottom.

I'm talking about a game where a reader interacts by making a choice

The screenshot shows a game interface titled "Fate of the Storm Gods" by Bendi Barrett. At the top, there are navigation links: "About", "More Games", "Blog", and "Subscribe". Below them are buttons for "Show Stats", "Restart", "Achievements", and "Settings". The main text reads: "The wind surrounds you as you fall, pushing and pulling in joy and excitement. It's so loud that all you can hear is a single, unbroken rush of noise. The vertiginous feeling gathers up in your stomach and churns as you plummet, but your mind is singularly focused as the atelier draws closer." A blue callout box on the left says: "Reader interacts by making a choice or by selecting \"Next\" (which is an interaction!)". A blue arrow points from this box to the "Next" button at the bottom of the choice screen. The choice screen itself has a title "Apprentice...attend me...." and four options:

- The voice reverberates from the rock beneath you up into your flesh. That's a new trick.
- The voice belongs to your master, whose command of Speech, the shaping of Extrivial into practical effect, considerably surpasses your own.
- You turn toward the atelier and head inside. You turn toward the atelier and head inside.
- "I'm not the first to do this. I can do this."

At the bottom of the choice screen is a large "Next" button. Below the choice screen is another "Next" button.

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or by clicking next w/no choice! Because that's an interaction!

The screenshot shows a game interface for "Fate of the Storm Gods" by Bendi Barrett. At the top, there's a navigation bar with links for "About", "More Games", "Blog", and "Subscribe". Below the title and author, there are buttons for "Show Stats" and "Restart". The main content area displays a narrative text: "The wind surrounds you, so still that all you can hear is the sound of your own breathing. Your stomach and chest feel tight as if a hand is squeezing them. The storm draws closer." A blue arrow points from the text "The voice reverberates through the room" to a choice box. The choice box contains the text "Apprentice...". Below the choice box are four radio button options: "The voice reverberates through the room", "The voice belches out practical effects", "You turn toward the door", and "I'm not the final judge". To the right of the choice box is a sidebar titled "THE NOVICE BUILDER". It has two sections: "ABILITIES" and "PERSONALITY". Under "ABILITIES", there are five stats: Speech: 50%, Artifice: 50%, Charisma: 50%, Wits: 50%, and Physicality: 50%. Under "PERSONALITY", there are eight traits arranged in a 2x4 grid: Subtle: 50% / Forthright: 50%, Brutal: 50% / Compassionate: 50%, Composed: 50% / Volatile: 50%, and Obedient: 50% / Independent: 50%. The number "7" is located at the bottom right of the sidebar.

Reader interacts by making a choice or by selecting "Next" (which is an interaction!), and the result of the choices can affect or be affected by stats

Fate of the Storm Gods

by Bendi Barrett

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Show Stats Restart

The wind surrounds you, so still that all you can hear is the sound of your own breathing. Your stomach and chest feel tight as if a hand is squeezing them. The storm draws closer.

This more first

Apprentice...

The voice reverberates through the room

The voice belches out practical effects

You turn toward the door

I'm not the final judge

THE NOVICE BUILDER

ABILITIES

Speech: 50%

Artifice: 50%

Charisma: 50%

Wits: 50%

Physicality: 50%

PERSONALITY

Subtle: 50% Forthright: 50%

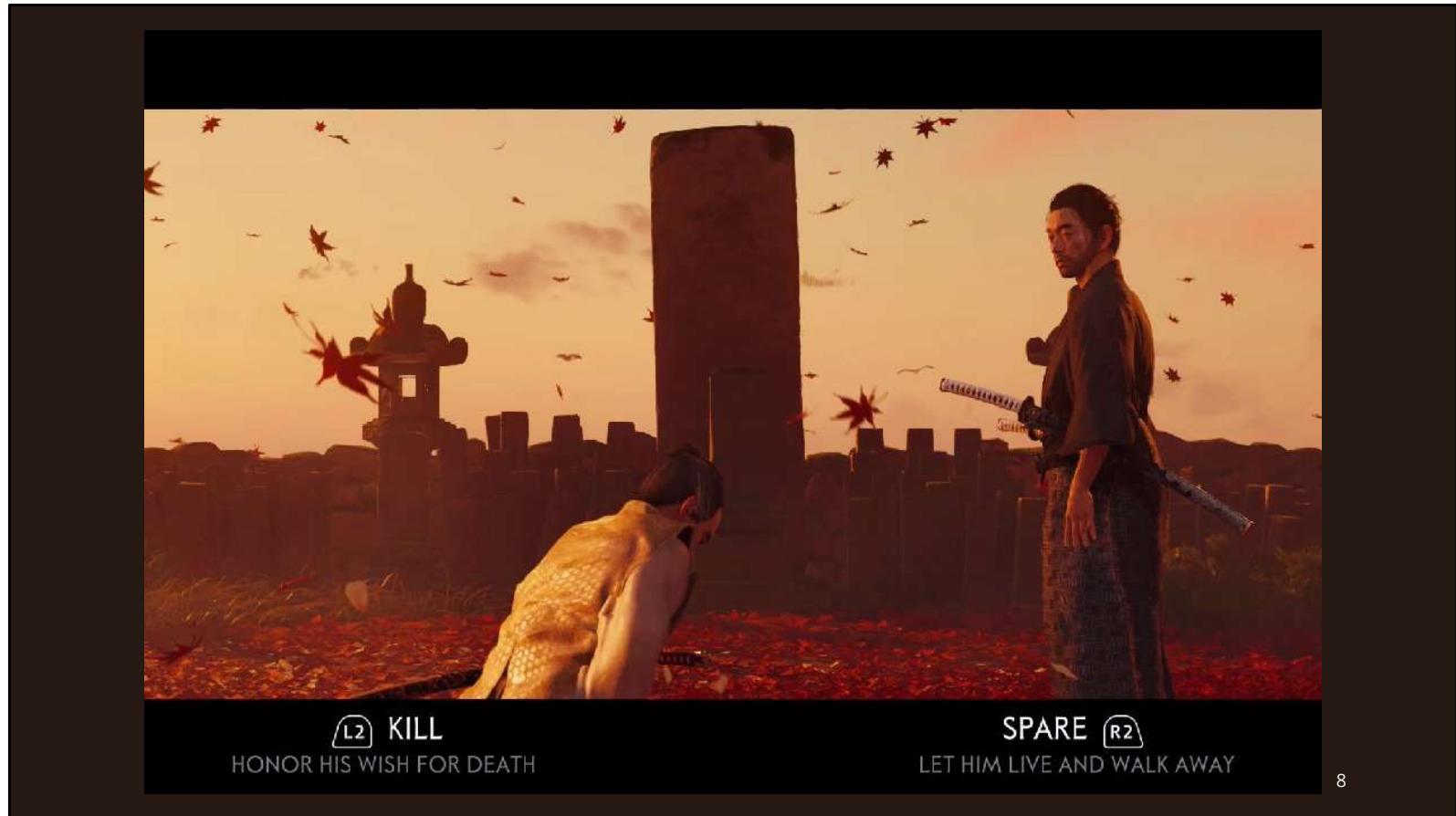
Brutal: 50% Compassionate: 50%

Composed: 50% Volatile: 50%

Obedient: 50% Independent: 50%

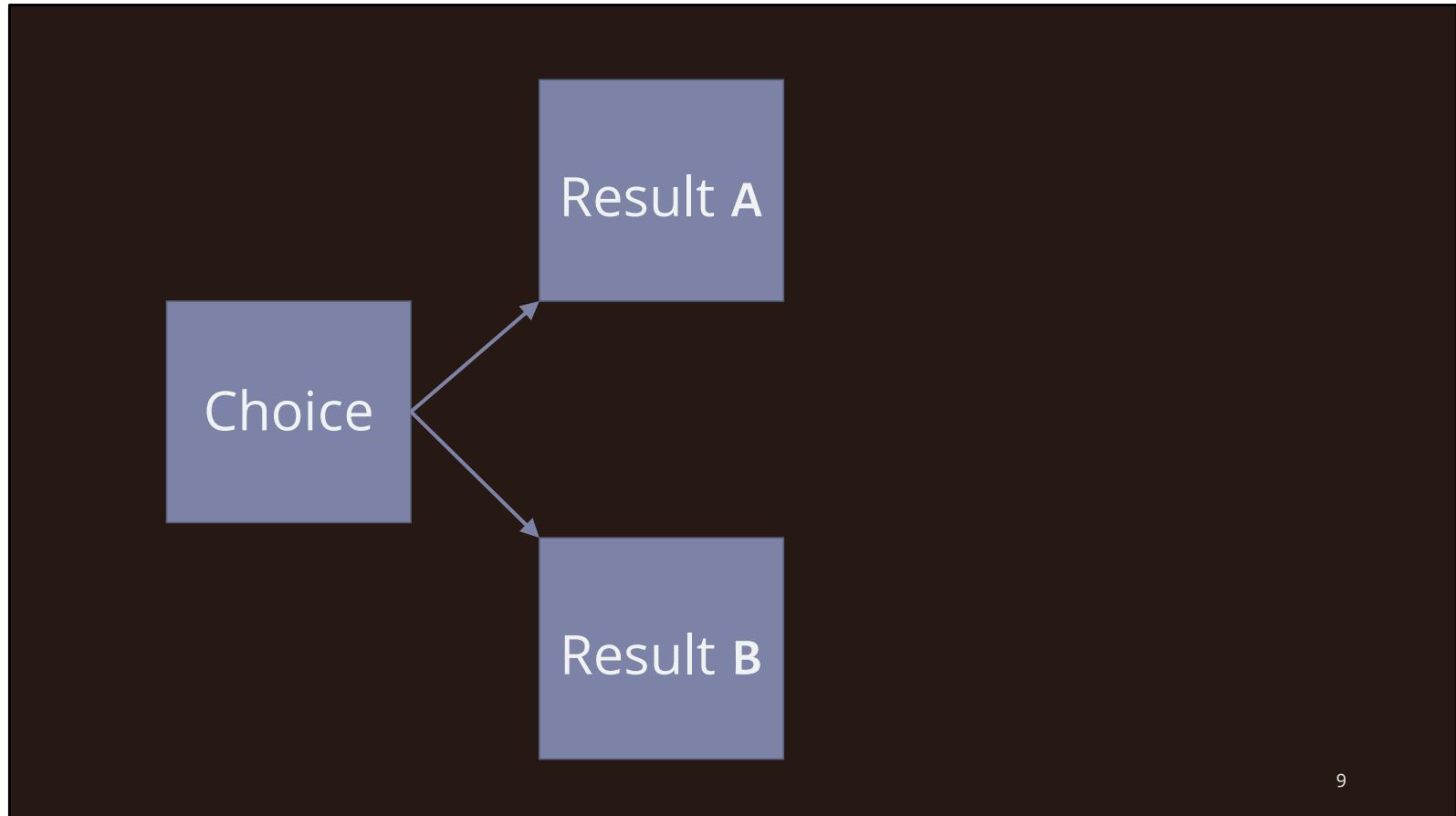
And the result of that choice can affect or be affected by stats.

Already there's a *bunch* here. Let's start with how choices affect the structure of your game.



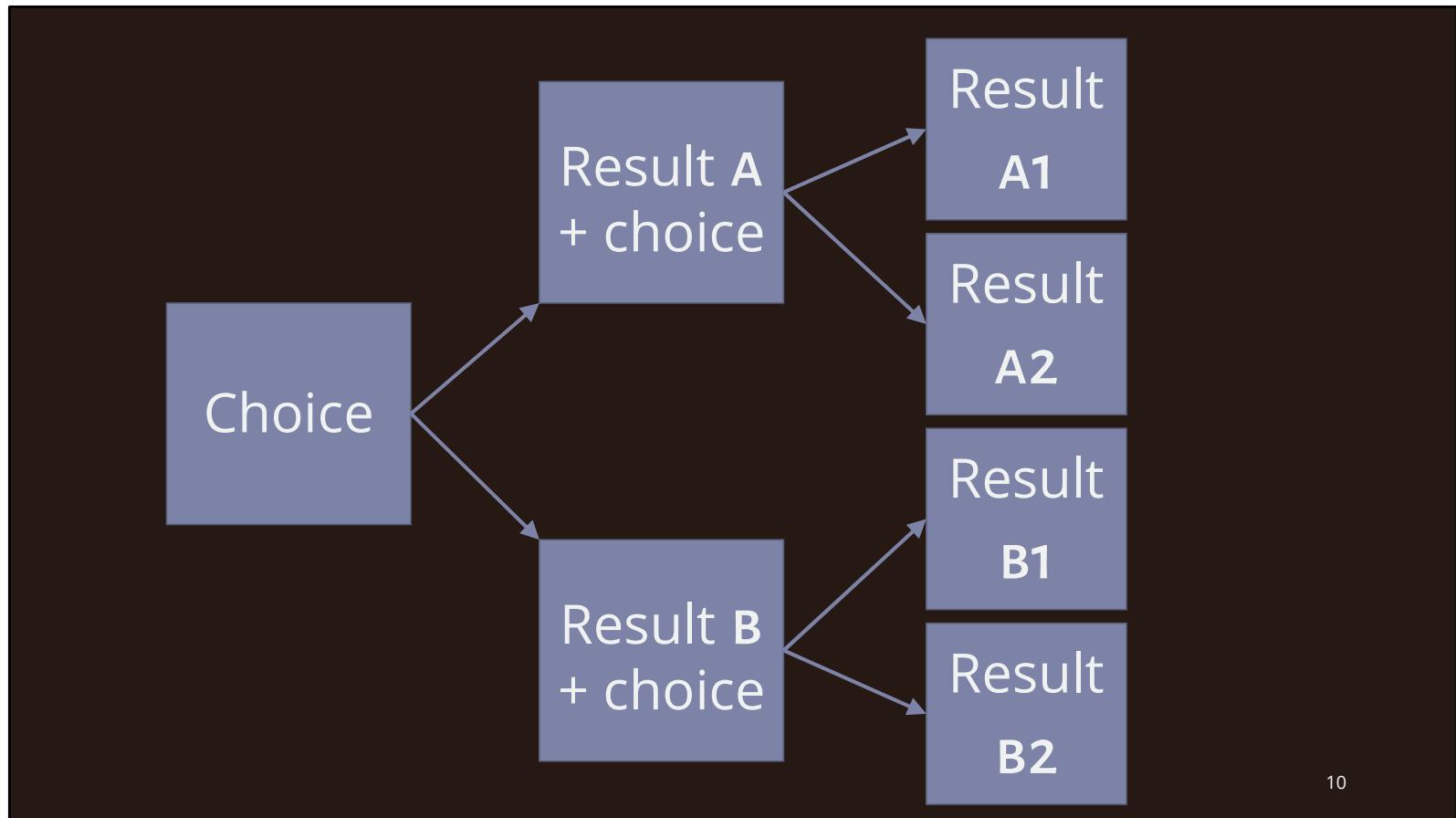
Here's a binary choice from the game Ghost of Tsushima. Your character has bested an opponent. The opponent asks you to kill him. What would you imagine could happen next in the game depending on the choice?

Know when this choice comes? **At the very end of the game.** That's because juggling multiple possible storylines is bonkers expensive in terms of work and \$\$\$ when you're talking about a game with graphics and sound and assets. In a text-based game, it's merely very hard work.

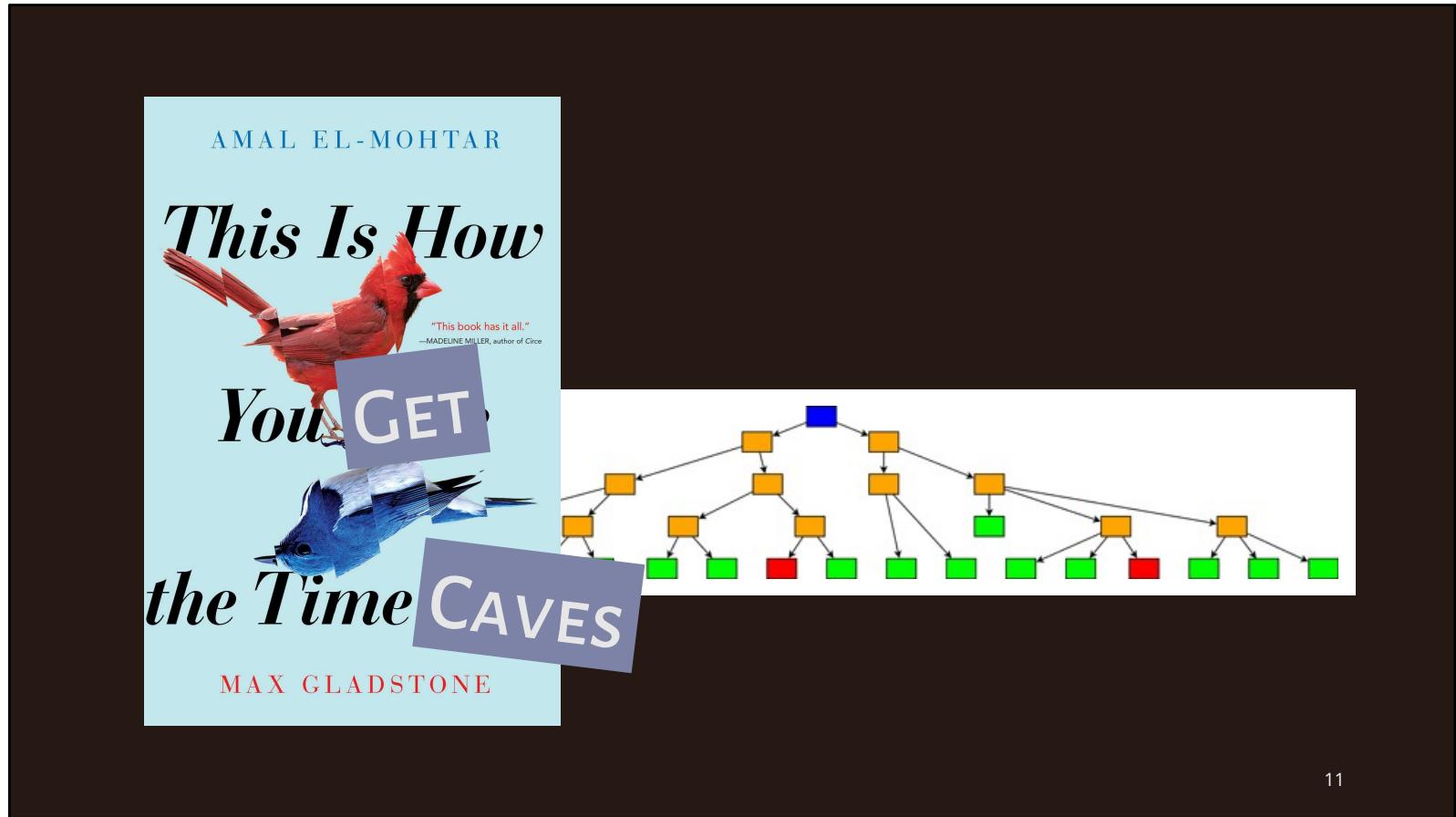


9

It can be tempting to think “every choice should change the story”. If you think of a choice creating a branch in your story as boxes and arrows like this, then imagine that

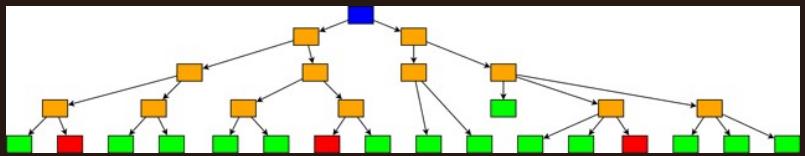


each branch has a choice that results in new branches, and you keep going...do you want a Time Cave?

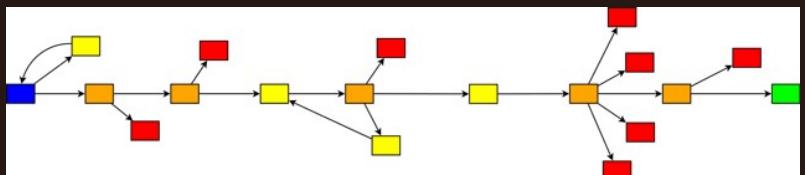


Because that's how you get a Time Cave!

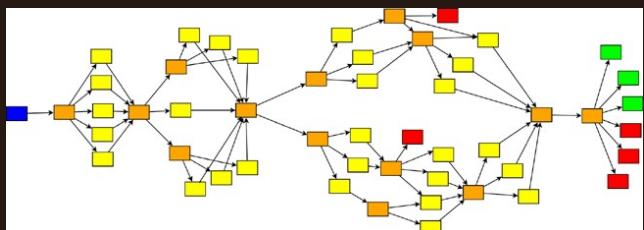
Looking at the structure of branch points and how they're arranged can give you an idea of what the choice-based story is doing.



Time Cave: Broad, not long



Gauntlet: Long, not broad

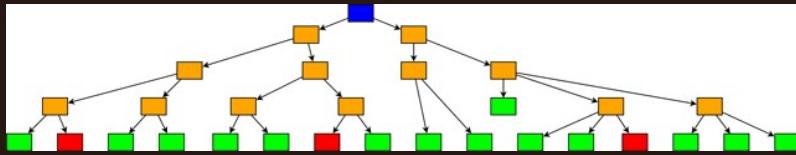


Branch & Bottleneck:
Branches rejoin, usually
around common events

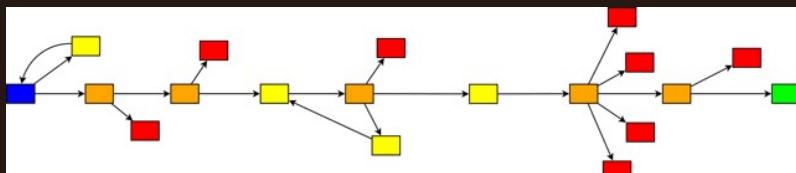
"Standard Patterns in Choice-Based Games", Sam Kabo Ashwell
<https://heterogenoustasks.wordpress.com/2015/01/26/standard-patterns-in-choice-based-games/>

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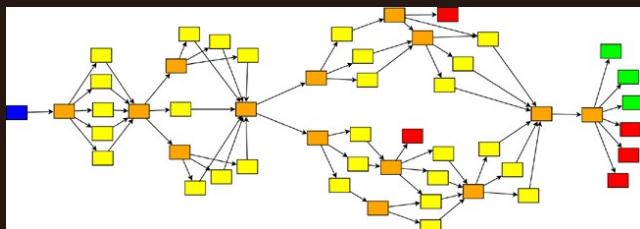
I'm taking all of this from Sam Kabo Ashwell's seminal post, "Standard Patterns in Choice-Based Games". Time Cave: lots of branches, little merging. Named after Choose Your Own Adventure book #1, The Cave of Time. For a longer game: a gauntlet, where branches don't last long and either merge back in (see the loop to the left) or are pruned off (rocks fall, you die!). Branch and bottleneck: have some branches, but they merge back in at defined points.



Time Cave: Broad, not long



Gauntlet: Long, not broad



Branch & Bottleneck:
Branches rejoin, usually
around common events

"Standard Patterns in Choice-Based Games", Sam Kabo Ashwell
<https://heterogenoustasks.wordpress.com/2015/01/26/standard-patterns-in-choice-based-games/>

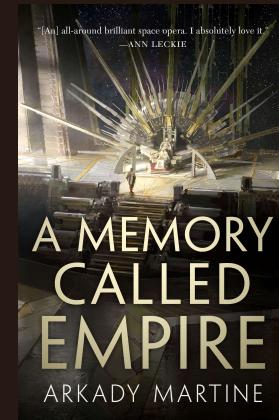
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Branch and bottleneck is the Choice of Games structure: you have chapters where you merge back together. Since we're talking about structure, let's look at the fundamental elements of a choice game.

MAHIT

MAHIT came down to the City, heart-planet and capital of the Teixcalaanli Empire, in a seed-skiff, a bubble of a ship hardly big enough for her body and her luggage both.

MAHIT came down to the City, heart-planet and capital of the Teixcalaanli Empire, in a seed-skiff, a bubble of a ship hardly big enough for her body and her luggage both. She squirted from the side of the imperial cruiser *Ascension's Red Harvest* and burned atmosphere on her planetward trajectory, which distorted the view. Thus the first time she saw the City with her own flesh eyes, not in infofiche or holograph or imago-memory, it was haloed in white fire and shone like an endless glittering sea: an entire planet rendered into an ecumenopolis, palatially urban. Even its dark spots—older metropolises not yet clad in metal, decaying urban blight, the harnessed remains of lakes—looked *populated*. Only the oceans remained untouched, and they gleamed too, a brilliantine blue-turquoise.



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I'll start with a novel, for comparison: Words, which form a [*] sentence. A bunch of sentences create [*] a paragraph. Paragraphs form [*] a scene, and the scenes are then put into [*] chapters to create a [*] novel.

The

The wind surrounds you as you fall, pushing and pulling in joy and excitement.

The wind surrounds you as you fall, pushing and pulling in joy and excitement. It's so loud that all you can hear is a single, unbroken rush of noise. The vertiginous feeling gathers up in your stomach and churns as you plummet, but your mind is singularly focused as the atelier draws closer.

Fate of the Storm Gods
by Bendi Barrett
[About](#) [More Games](#) [Blog](#) [Subscribe](#)
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The wind surrounds you as you fall, pushing and pulling in joy and excitement. It's so loud that all you can hear is a single, unbroken rush of noise. The vertiginous feeling gathers up in your stomach and churns as you plummet, but your mind is singularly focused as the atelier draws closer.

This isn't your first freefall. The training you've undergone at the atelier has prepared you for more strenuous efforts than this. Can you still remember what went through your mind that first time?

"I can't believe there's so much sky."
 "Am I going to survive this?!"
 "Faster!"
 "I'm not the first to do this. I can do this."

Next

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 "Faster!"
 "I'm not the first to do this. I can do this."

Next



"Fate of the Storm Gods," Bendi Barrett

15

What about choice games? Words, which form a [*] sentence. A bunch of sentences create [*] a paragraph. Paragraphs continue until you get an [*] interaction point, not a scene. You can organize these beats of interaction in all kinds of ways, but Choice of Game's house style is to collect the interactions into a [*] chapter, and the chapters form a [*] game.

This is a critical difference between traditional fiction and choice-based fiction. The player's experience is broken up by interactions.

INTERACTIONS FORM THE FUNDAMENTAL BEAT OF CHOICE-BASED FICTION

Fate of the Storm Gods
by Bendi Barrett
[About](#) [More Games](#) [Blog](#) [Subscribe](#)
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The wind surrounds you as you fall, pushing and pulling in joy and excitement. It's so loud that all you can hear is a single, unbroken rush of noise. The vertiginous feeling gathers up in your stomach and churns as you plummet, but your mind is singularly focused as the atelier draws closer.

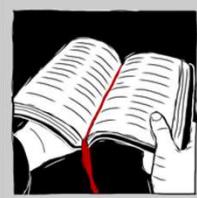
This isn't your first freefall. The training you've undergone at the atelier has prepared you for more strenuous efforts than this. Can you still remember what went through your mind that first time?

"I can't believe there's so much sky."
 "Am I going to survive this?!"
 "Faster!"
 "I'm not the first to do this. I can do this."

Next

16

Interactions form the fundamental beat of choice-based fiction. The player will be reading along, and then their reading is interrupted. The rhythm of your game is text, interaction, text, interaction, text, interaction. The amount of text between points of interaction affect your game's pace in the same way that the number of words in a sentence or sentences in a paragraph do.



Funerals are a kind of spectator sport for you these days. You come to see who'll show up, what well-meaning but thoughtless words they'll say, that sort of thing.

This one's in the late afternoon instead of the heat of the day, thank goodness. There aren't any clouds between you and the sun, just red red rays coloring everyone crimson.

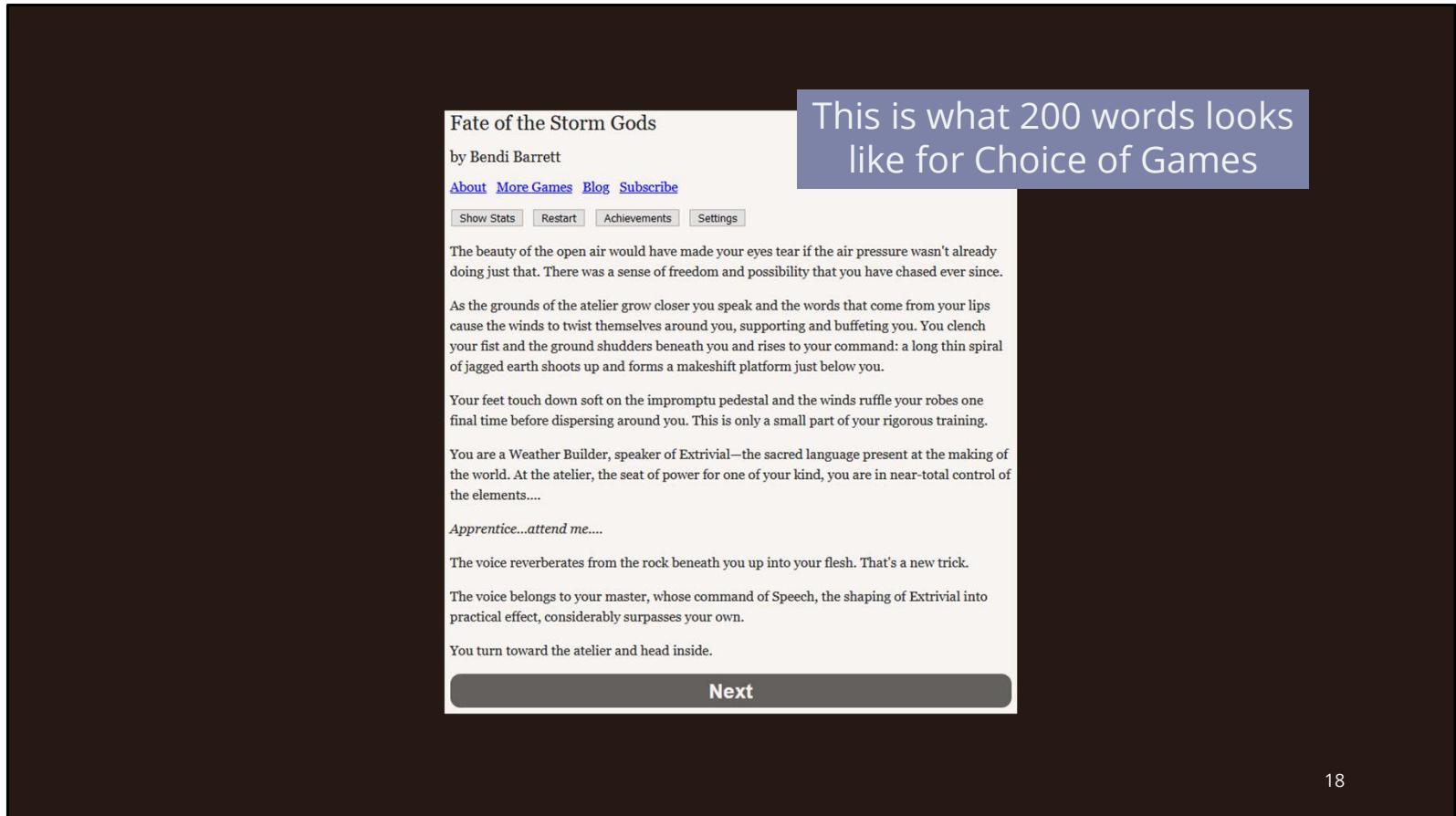
It's the usual graveside arrangement, with one of those green tents over the open grave and the casket on a—some kind of contraption that'll drop it into the hole once the platitudes are done and no one's looking any more. The funeral home workers scattered cheap plastic seats around the grave like birdseed. At least you got one. There's not much fun about being old, but they do give you a chair when you damn well need one.

Being so close to the front, down with the **mourners**, means you're also close enough to the preacher to hear him over the **tent fringe** snapping in the wind.

"Will Not Let Me Go," Stephen Granade

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You can use that effect in various ways. Read through this, and let me know when you're ready to advance. [*] My story "Will Not Let Me Go" is about a man dealing with his dementia, so I used interaction points to mimic the stutter-stop of his thoughts when he's searching for a word.



18

Choice of Games' house style is to have about 100-200 words in the main text before a "Next" or choice, and no more than around 400 words between actual choices. But even with those guidelines, you still have room to play.

The wind surrounds you as you fall, pushing and pulling in joy and excitement. It's so loud that all you can hear is a single, unbroken rush of noise. The vertiginous feeling gathers up in your stomach and churns as you plummet, but your mind is singularly focused as the atelier draws closer.

This isn't your first freefall. The training you've undergone at the atelier has prepared you for more strenuous efforts than this. Can you still remember what went through your mind that first time?

- "I can't believe there's so much sky."
- "Am I going to survive this?!"
- "Faster!"
- "I'm not the first to do this. I can do this."

The winding hallways of the workshop are lit from above by brilliant shafts of light bent into flaming ouroboros and hung from the ceiling in dangling cages. They murmur haughtily as you pass.

The atelier is crowded with such experiments, each showing the unconventional zeal of the master: tiny thunderstorms pour rain in bell jars, models of cities rise up, expand, then decay and crumble before your eyes only to resurrect themselves from the rubble without any trace of manual manipulation.

Elsewhere are other objects, which have been collected from far-flung corners of the world, objects that do not draw strength from the winds and the rains. You tighten the glove on your non-dominant hand as a reflex.

Two such objects have been passed down to you: one is the gauntlet called Motus, through which you can direct the will of earth. The other is a brass ring called Vatra, which manifests fire.

The master has indulged your studies in artifice—the attempts to shed light on the workings and provenance of these strange devices—but has always been clear that a Builder's first realm of study should be Speech.

To that end, tucked away in one corner of a cramped hallway is one of your own creations, which the Master praised, even as he questioned its ultimate utility. It was your first experiment speaking the Extrivial language into pure Speech; crafting something from nothing.

- A bright blue cloud of fire that burns endlessly and rains brimstone. It's as **brutal** and **unsympathetic** as I can sometimes be.
- A bolt of localized lightning that repeats every ten seconds. It might lack imagination, but it is bold and **forthright**.
- A tottering tower of sand always just one breath away from collapse. Like me, unpredictable and **volatile**.
- A fractal plant growing recursive versions of itself according to strict rules. As **obedient** as its creator.

19

Read through the left description and set of choices. What sense do you get from it? [*] Contrast it with this other sample. It's the same structure: text, then interaction. But the first has a zippier feel. The second is slower, more contemplative, and the number of choices (eight in the full section!) means the player will likely take longer to think through which one they want.

Reader interacts by making a choice or by selecting "Next" (which is an interaction!), and the **result of the choices can affect or be affected by stats**

The screenshot shows a game interface for "Fate of the Storm Gods" by Bendi Barrett. At the top, there are buttons for "Show Stats" and "Restart". Below that is a text passage: "The wind surrounds you, so still that all you can hear is the sound of your own breathing. Your stomach and chest feel tight as the storm draws closer." A blue arrow points from the text area to a choice box labeled "Apprentice...". The choice box contains five options: "The voice reverberates in my head", "The voice becomes more practical and focused", "You turn toward the source of the noise", "I'm not the final judge here", and "I'm not the final judge here". To the right of the choice box is a sidebar titled "THE NOVICE BUILDER" containing sections for "ABILITIES" and "PERSONALITY". The "ABILITIES" section lists: Speech: 50%, Artifice: 50%, Charisma: 50%, Wits: 50%, and Physicality: 50%. The "PERSONALITY" section lists: Subtle: 50%, Forthright: 50%, Brutal: 50%, Compassionate: 50%, Composed: 50%, Volatile: 50%, Obedient: 50%, and Independent: 50%.

Fate of the Storm Gods

by Bendi Barrett

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Show Stats Restart

The wind surrounds you, so still that all you can hear is the sound of your own breathing. Your stomach and chest feel tight as the storm draws closer.

This is the first time I've been here. I'm not the final judge here. I'm not the final judge here.

Apprentice...

The voice reverberates in my head
 The voice becomes more practical and focused
 You turn toward the source of the noise
 I'm not the final judge here
 I'm not the final judge here

THE NOVICE BUILDER

ABILITIES

Speech: 50%
Artifice: 50%
Charisma: 50%
Wits: 50%
Physicality: 50%

PERSONALITY

Subtle: 50%	Forthright: 50%
Brutal: 50%	Compassionate: 50%
Composed: 50%	Volatile: 50%
Obedient: 50%	Independent: 50%

20

We've talked about structure and how choices affect it both in terms of branches and the rhythm of play. Let's talk about stats and what they're for.

WHAT ARE STATS FOR, ANYWAY?

A **number**

To **record** players' choices

In **aggregate**

In a way players can **track**

To let those choices have **consequences**

21

There we go, everything's clear, class dismissed.

WHAT ARE STATS FOR, ANYWAY?

A number

To **record** players' choices

In **aggregate**

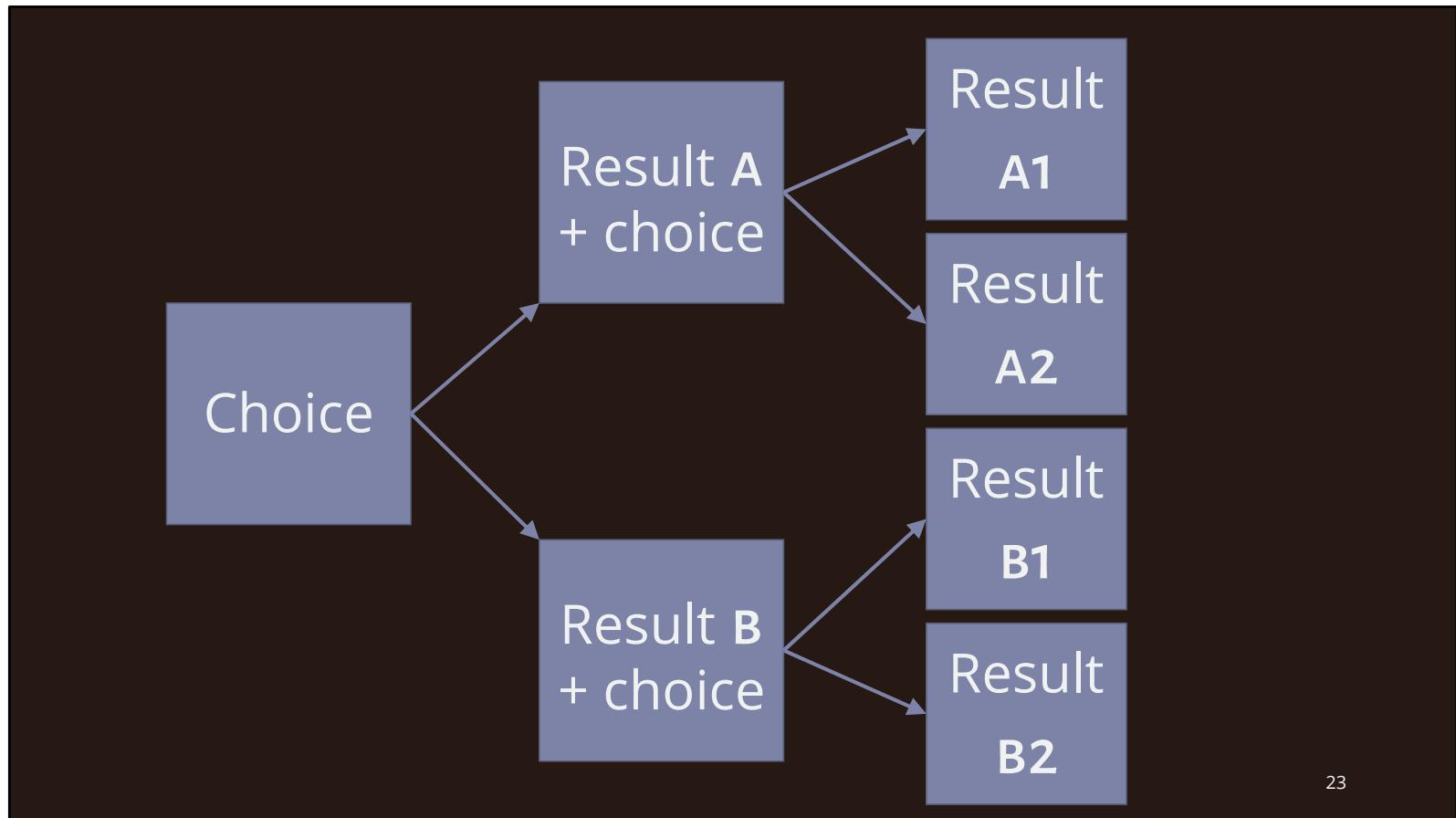
In a way players can **track**

To let those choices have **consequences**

22

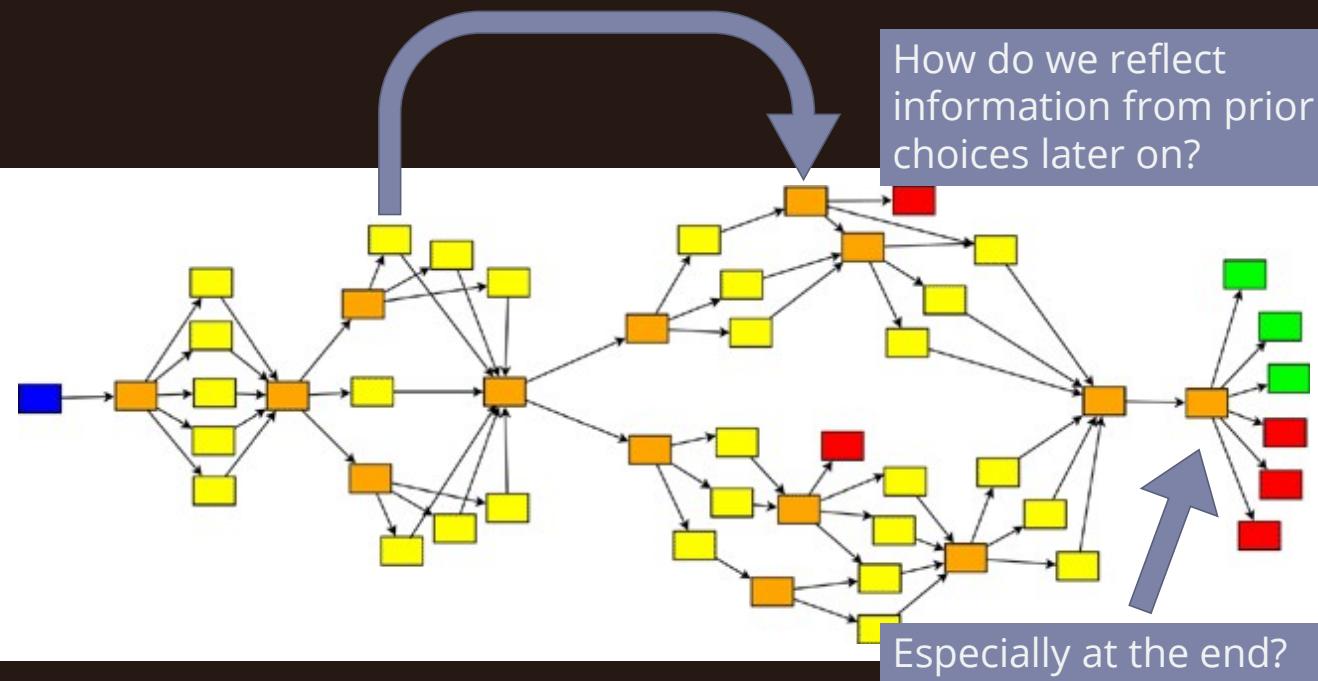
I'll tackle this starting with the last bit. We want our interactive story to reflect the choices the players make. Note that choices can have an effect on the player without changing the story! Reflective choices, ones that don't have a mechanical effect, can let the player express their own values in the game world or can ask players to determine what kind of person their character is like.

But how can a choice game provide mechanical consequences for players' choice?



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The most straightforward way is to branch at every choice, but, uh, don't do that. What we're doing when we branch is encoding information about past choices in the game's underlying structure.



24

If we merge branches in a branch and bottleneck fashion, then we've lost information about the choices the player made.

WHAT ARE STATS FOR, ANYWAY?

A number

To **record** players' choices

In **aggregate**

In a way players can **track**

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25

You could record each individual choice, and sometimes that's what's needed, but another way is to

WHAT ARE STATS FOR, ANYWAY?

A number

To **record** players' choices

In **aggregate**

In a way players can **track**

To let those choices have **consequences**

26

aggregate the effect of a bunch of choices together. If the player consistently chooses their character to smooth-talk people instead of being blunt and direct, then you can aggregate those choices together.

WHAT ARE STATS FOR, ANYWAY?

A **number**

To **record** players' choices

In **aggregate**

In a way players can **track**

To let those choices have **consequences**

27

And one straightforward way of doing that is with numbers.

The image shows a handwritten D&D character sheet for 'MELF' and a digital interface for 'THE NOVICE BUILDER'. A blue arrow points from the handwritten sheet to the digital interface.

MELF

STR	19 (+3/+7) (17)
WIS	17
CON	17 (-1) (16)
DEX	18 (+1) (19)
INT	19 (-1) (18)
CHAR	9
COM	15

ARMOR CLASS - 9
+3 Evasion
+2 Shield (silver, unarmored)
4 + POINTS: 95 %

FIGHTER /MELF - 1000

THE NOVICE BUILDER

ABILITIES

Speech: 50%
Artifice: 50%
Charisma: 50%
Wits: 50%
Physical: 50%

PERSONALITY

Subtle: 47%	Forthright: 53%
Brutal: 50%	Compassionate: 50%
Composed: 57%	Volatile: 43%
Obedient: 50%	Independent: 50%

28

D&D stats are a classic example. When you gain certain levels, you can choose to increase them. In the stats for [*] Fate of the Storm Gods, the abilities look a lot like the D&D attributes. But [*] what are these? Choice of Games calls them [*] opposed stats. They're a number from 0 to 100%. There is no difference mechanically between Speech (a number that can go up or down) or, in that first personality stat, Subtle, a number that can go up or down. But it's a huge difference in how the player perceives it. If speech goes up, I'm better at speech. If subtle goes up, I'm more subtle and less forthright, but if it goes down, I'm more forthright and less subtle. It's the push-pull of aspects of a character, and let you design a game world that responds to personality choices the player makes.

WHAT ARE STATS FOR, ANYWAY?

A **number**

To **record** players' choices

In **aggregate**

In a way players can **track**

To let those choices have **consequences**

29

Notice how I mentioned that there's a difference in how players experience opposed stats?
That's because players can track them.

Advanced Studies in Pattern Magic

by Stephen Granade

[About](#)

[Show Stats](#) [Restart](#) [Achievements](#) [Settings](#)

"I solve a Rubik's cube," you say.

"Have you practiced that?" Darcy asks.

"Yeah. Bunches. You can't understand magic theory if your mind's too altered."

"Excellent," Darcy says. "You help me with theory stuff and I'll help you with the practical aspects."

"All right, students," Dr. Ellison calls. "We'll start with a simple drill. Non-magical."

"Boring," a student near you mutters.

"It pays to be careful, Desmond," Dr. Ellison tells the student. You resolve to keep your comments to yourself for the rest of the assessment.

Dr. Ellison turns back to the room at large. "Begin by one of you reciting the alphabet backwards. When your partner tells you to stop, perform your method. When you finished, see if you can remember where you were in the alphabet."

Here We Go

WINFIELD PHILLIPS COLLEGE TRANSCRIPT

Student's Name: **Jay Shelly**
Current Year: First Year

Overall Skills

Classwork (Below Average): 25%
Library Research (Average): 32%
Class Participation (Average): 32%
Written Arguments (Average): 34%
Team Participation (Below Average): 25%

Tendencies

Outgoing: 50%	Reserved: 50%
Pathos: 57%	Logos: 43%
Self: 59%	Others: 41%
Driven: 58%	Relaxed: 42%

References

Darcy: 52%
Manish: 58%

School Biography and Extracurriculars

You came to Winfield Phillips after discovering on your own that magic exists. You spent your freshman year in Marsh dorm.

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Every screen in a Choice of Games game has a “Show Stats” button that brings up the [*] stats page. They can see where their stats are, and the stats page can contextualize what the values mean.

CHOICESCRIPT GAME STRUCTURE

31

I'll talk more later about choosing stats, but I've talked theory enough. Let's dive into ChoiceScript. We'll start with how a ChoiceScript game is laid out.

You write your game in
plain text files



The ChoiceScript engine parses it

<p>Advanced Studies in Pattern Magic</p> <p>by Stephen Granade</p> <p>About</p> <p>Show Stats Restart Achievements Settings</p> <p>"I solve a Rubik's cube," you say.</p> <p>"Have you practiced that?" Darcy asks.</p> <p>"Yeah. Bunches. You can't understand magic theory if your mind's too altered."</p> <p>"Excellent," Darcy says. "You help me with theory stuff and I'll help you with the practical aspects."</p> <p>"All right, students," Dr. Ellison calls. "We'll start with a simple drill. Non-magical," she adds.</p> <p>"Boring," a student near you mutters.</p> <p>"It pays to be careful, Desmond," Dr. Ellison tells the student. You resolve to keep your comments to yourself for the rest of the assessment.</p> <p>Dr. Ellison turns back to the room at large. "Begin by one you reciting the alphabet backwards. When your partner tells you to stop, perform your method. When you have finished, see if you can remember where you were in the alphabet."</p>

You play the game
in your browser

You write your ChoiceScript game in text files. The ChoiceScript engine eats your text files and turns it into a game that you play in your browser.

The screenshot displays the Choicescript IDE interface with four tabs open:

- startup.txt**: The game's startup configuration file.
- [scene file].txt**: The main scene file containing the game logic.
- choicescript_stats.txt**: A file showing game statistics.
- choicescript_status.txt**: A file showing game status information.

The [scene file].txt tab contains the following text:

```

some > [scene]
1 *author Stephen Granade
2 *title Advanced Studies in Pattern Magic
3 *scene_list
4
5 _arrival
6 _prep
7 _goal_starts
8 4_town_and_gown
9 5_career
10 6_holiday_party
11 ending
12 update_stats
13 debug
14
15 /*Comment Sorry, Mary, I'm used to this approach from Python
16 #create implicit_control_flow true
17
18 /*Comment A value so I can know what I have & haven't set
19 #create unset "TK"
20
21 /*Comment Achievements
22 #achievement symposium hidden 10 Theoretical Symposium
23 hidden
24 Convinced your colleagues to focus the symposium on theoretical topics.
25 #achievement symposium_organized 20 Thin Seed
26 Use a student's research to find a thin spot in the dimensional barrier.
27 Found a way to use the seed to grow a new dimension in Gabriel's research.
28 #achievement took_full_breathup tour visited 10 Twenty-Dollar Tour
29 Take a full tour of a brewhouse.
30 Took a tour of the brewhouse of the Mandelbrot Set's brewing facilities.
31 #comment todo moar!
32
33 /*Comment SKILLS-
34 #create skill_labwork 25
35 #create skill_library_research 25
36 #create skill_politic 25
37 #create skill_martial 25
38 #create skill_political_insight 25
39

```

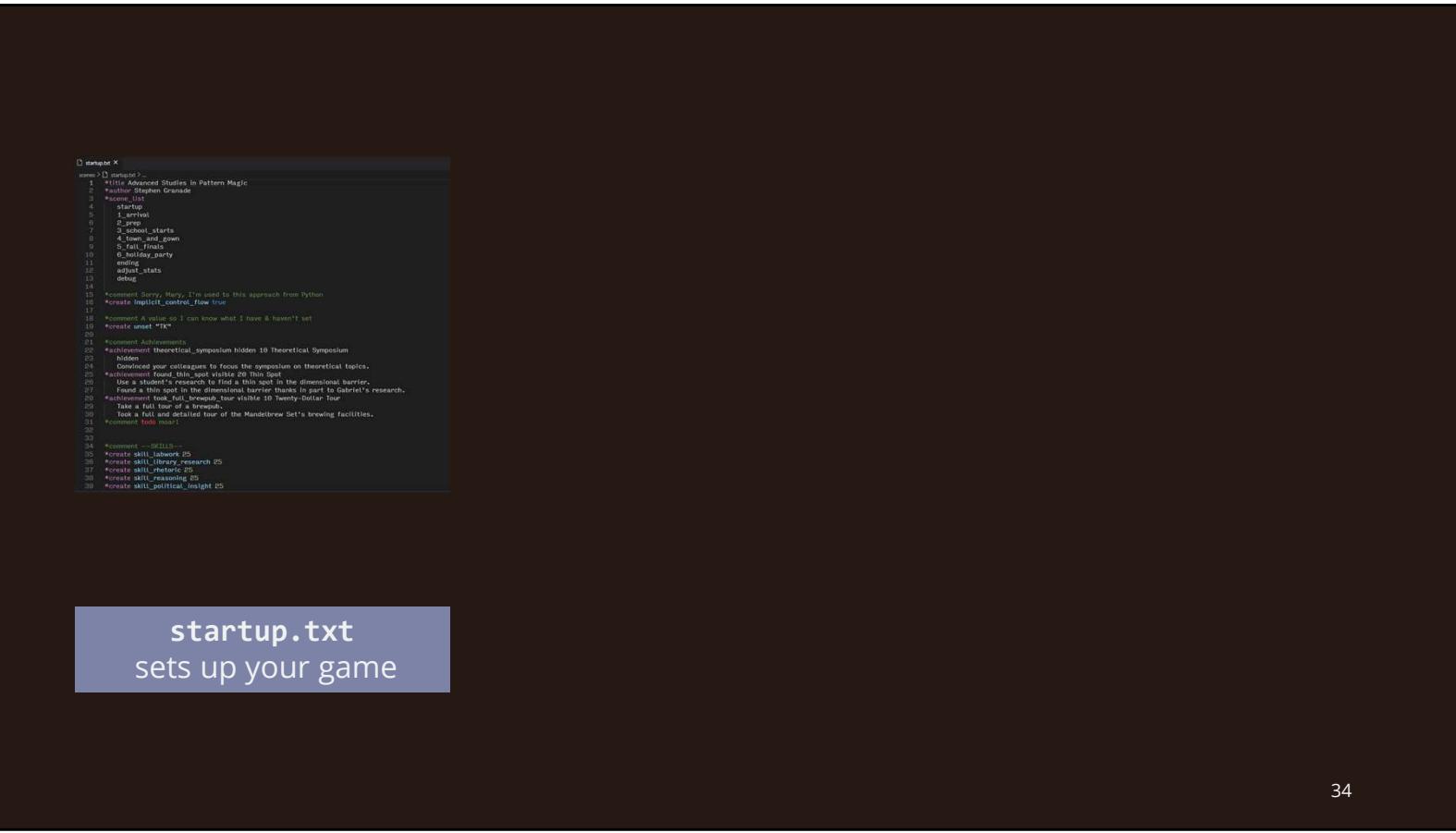
The choicescript_status.txt tab shows the following status information:

```

some > choicescript_status ...
1 #label stats_screen
2
3 /*Comment Set up default values to make Quicktest not go barf
4 #set choice_index 0
5 #set background_e 1
6 #set elective_e 0
7 #set max_health_damage 1
8 #set rushed_theta False
9 #set res_armed_resistance_strength_e 1
10 #set res_crafted_effect_e 1
11 #set kayla_is_faculty_peer true
12
13 #if in_cottage_flashback
14 #goto flashback_stats
15
16
17 /*DYNAMICALLY VITAE(b)
18 #if pc != unset
19 (#DPC)(b)
20
21
22 /*Qualifications(b)
23
24 #push sub_get_skill_descriptor "skill_labwork"
25 #push sub_get_skill_descriptor "skill_labwork"
26 #push sub_get_skill_descriptor "skill_labwork" (@return_1)
27 #push sub_get_skill_descriptor "skill_library_research"
28 #push sub_get_skill_descriptor "skill_library_research"
29 #push sub_get_skill_descriptor "skill_politic"
30 #push sub_get_skill_descriptor "skill_politic" (@return_1)
31 #push sub_get_skill_descriptor "skill_martial"
32 #push sub_get_skill_descriptor "skill_martial"
33 #push sub_get_skill_rhetoric_blerio (@return_1)
34 #push sub_get_skill_descriptor "skill_reasoning"
35 #push sub_get_skill_descriptor "skill_reasoning"
36 percent skill_reasoning Reasoning (@return_1)
37 #push sub_get_skill_descriptor "skill_political_insight"
38 #push sub_get_skill_descriptor "skill_political_insight"
39 percent skill_political_insight Political Insight (@return_1)

```

In general your game is structured as a startup file that sets up your game world, scene files that contain your game, and a choicescript_stats file that shows your stats.



```
startup.txt
1 #include <ID3DXMorph.h>
2 #include "title.h"
3 #include "author.h"
4 #include "skill.h"
5 #include "script.h"
6 #include "ui.h"
7 #include "ui_text.h"
8 #include "ui_button.h"
9 #include "ui_label.h"
10 #include "ui_image.h"
11 #include "ui_rect.h"
12 #include "ui_scroller.h"
13 #include "ui_table.h"
14 #include "ui_textbox.h"
15 #include "ui_textfield.h"
16 #include "ui_textlabel.h"
17 #include "ui_textarea.h"
18 #include "ui_textinput.h"
19 #include "ui_textbutton.h"
20 #include "ui_textcheckbox.h"
21 #include "ui_textradio.h"
22 #include "ui_textlist.h"
23 #include "ui_textlistitem.h"
24 #include "ui_textlistcheckbox.h"
25 #include "ui_textlistradio.h"
26 #include "ui_textlistcheckboxitem.h"
27 #include "ui_textlistradioitem.h"
28 #include "ui_textlistcheckboxlistitem.h"
29 #include "ui_textlistradioitemlistitem.h"
30 #include "ui_textlistcheckboxlistitemlistitem.h"
31 #include "ui_textlistradioitemlistitemlistitem.h"
32 #include "ui_textlistcheckboxlistitemlistitemlistitem.h"
33 #include "ui_textlistradioitemlistitemlistitemlistitem.h"
34 #include "ui_textlistcheckboxlistitemlistitemlistitemlistitem.h"
35 #include "ui_textlistradioitemlistitemlistitemlistitemlistitem.h"
36 #include "ui_textlistcheckboxlistitemlistitemlistitemlistitemlistitem.h"
37 #include "ui_textlistradioitemlistitemlistitemlistitemlistitemlistitem.h"
38 #include "ui_textlistcheckboxlistitemlistitemlistitemlistitemlistitemlistitem.h"
39 #include "ui_textlistradioitemlistitemlistitemlistitemlistitemlistitemlistitem.h"
40
41 //Comment Garry, I'm used to this approach from Python
42 *create implied_control_flow true
43
44 //Comment what I can know what I have & haven't set
45 *create unset **"**
46
47 //Comment Achievements
48 *achievement theoretical_symposium hidden 10 Theoretical Symposium
49
50 //Hidden
51
52 //Encourage your colleagues to focus the symposium on theoretical topics.
53 *achievement found_thin_spot visible 20 Thin Spot
54
55 //Find a thin spot in the dimensional barrier that has been created by the dimensional barrier.
56 //Found a thin spot in the dimensional barrier thanks in part to Gabrett's research.
57 *achievement took_full_brewpub_tour visible 10 Twenty-Dollar Tour
58
59 //Took a full and detailed tour of the Mandelbrew Sett's brewing facilities.
60
61 //Comment Todo mode!
62
63
64 //Comment ---SKILLS---
65 *create skill_labwork 25
66 *create skill_library_research 25
67 *create skill_mechanics 25
68 *create skill_reasoning 25
69 *create skill_political_insight 25
```

The only one you absolutely need is the `startup.txt` file, but if you write a larger game, splitting it up into separate scene files, typically one per chapter, can help you keep your game's structure.

The screenshot shows a code editor window for a ChoiceScript game. The file is named '1_arrival.txt'. The code is organized into three main sections:

- Text the player sees**: This section contains player-facing text. Lines 435-438 show a conversation about patterns, and line 439 introduces a choice. Lines 443-445 show the player's response to the choice.
- Code (*commands)**: This section contains ChoiceScript commands. Line 439 starts with an asterisk (*) followed by 'choice'. Lines 440-442 show a command to set a trait. Lines 446-448 show another command to set a trait.
- Choice with #options**: This section contains code for handling player choices. Lines 439-445 show the logic for the choice made in line 439, including responses and trait modifications.

```

1_arrival.txt X
scenes > 1_arrival.txt > fake_choice > #I counter his spell with one of...
435 That's how you know none of the three patterns actually work.
436 However, the middle one is [i]almost[/i] complete. A faint haze
437 hovers over it. You know how to complete it.
438 Not that you want to talk about your synesthesia.
439 *choice
440 #It gives me a leg up over other practitioners.
441 *set trait_driven %+trait_small_change
442 Most practitioners don't know if a pattern works unless
they study it. You can tell at a quick glance whether a
bunch of squiggly lines is a pattern or someone's bored
doodle. Why would you want to let others know about your
synesthesia when it can help you be better than other
students?
443 #I don't want to draw that kind of attention to myself.
444 *set trait_outgoing %-trait_small_change
445 "So letters have colors?" "What do you smell when the
class bell rings?" "Isn't that really distracting?"
You've heard every intrusive question about synesthesia
from people who can't be bothered to read Wikipedia. You
don't want people to know you as "the one with
synesthesia."
#Whenever you mention it, people have all these annoying
feelings about it.
*set trait_pathos %-trait_small_change
Your pediatrician said that between two and four percent
of the population has synesthesia and that it's no big
deal. From your experience, no one knows that, because
they act like synesthesia is this big unusual trait and

```

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Here's a closer look at ChoiceScript code. Don't worry about the details, because in a moment we'll start from the ground up building a simple ChoiceScript game. But I wanted to show you elements so you can recognize them as we run into them. Some of your game will be [*] text the player sees. In fact, most of your game will be text that the player sees! But then you'll have sections of [*] code. Code consists of a command, all of which start with an asterisk. Again, don't worry about that code. The main thing to notice is that commands are colored purple so we can see them more easily. One command bears special mention: [*] the choice command, as you'll use it a lot.

LET'S CODE IN CHOICESCRIPT



A screenshot of a dark-themed code editor window titled "startup.txt". The file contains the following text:

```
1 *title Stephen's Example Workshop Game
2 *author Stephen Granade
3
4 *finish
```

ChoiceScript has special commands. All of them start with *. They are colored purple in VS Code.

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This is the world's shortest ChoiceScript game! ChoiceScript has special commands that tell the game engine what to do. All of them start with an asterisk.

*page_break CREATES A PAGE BREAK

```
4 The player will see any words you write.  
5 ChoiceScript glues lines together  
6 and doesn't care about  
7 individual carriage returns.  
8  
9 A blank line creates a new paragraph.  
10  
11 Break up large chunks of text with a page break.  
12 (~200 – 250 words)  
13  
14 *page_break  
15  
16 The *page_break command creates a "Next" button.  
17 You can customize what it shows, though.  
18  
19 Choice of Games house style is to use:  
20  
21 *page_break Max Five Words, Title Case  
22
```

The *page_break command creates a "Next" button. You can customize what it shows, though.

Choice of Games house style is to use:

Max Five Words, Title Case

*choice AND #Options CREATE CHOICES

```
4 It is time. The dragon awaits. Who will you  
5 take with you on this epic adventure?  
6  
7 *choice  
8   #Bernice the Brave.  
9     todo bernice  
10  #Walla the Wise.  
11    todo walla  
12  #Maris the Meek.  
13    todo maris
```

These indents **are not optional**

It is time. The dragon awaits. Who will you take with you on this epic adventure?

- Bernice the Brave.
- Walla the Wise.
- Maris the Meek.

Next

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When it comes to *choices and #Options, note that the indents aren't optional. In VS Code, look for the faint gray vertical lines

CHOICE OF GAMES HOUSE STYLE FOR #Options

- First person: #I sneak around the gate.
- Imperative: #Sneak around the gate.
- Sentence fragment: #Sneak around.

- Use the same style for all options in a given choice.
- Aim for fewer than fifteen words; don't go over thirty if you can avoid it.

The thing about very long options is that they dominate the choice box and make it hard not only for players to read the other options but also to hold what the option is in their head, though long options when contrasted with short ones can have a comedic effect.

Bernice the Brave.

Walla the Wise.

*label MARKS A SPOT; *goto GOES TO IT

```
18 Let's go to Alice's house!
19
20 *goto alices_house
21
22 This part gets skipped over.
23
24 *label alices_house
25
26 Now we're at Alice's house.
27
```

Let's go to Alice's house!

Now we're at Alice's house.

One word, though you
can use underscores

WHAT WILL THE PLAYER SEE?

```
18 Goto can skip forward!
19
20 *goto skip_forward
21
22 *label skip_backward
23
24 Though skipping backward can make
25 it hard to read your code.
26
27 *goto all_done
28
29 *label skip_forward
30
31 Goto can skip back!
32
33 *goto skip_backward
34
35 *label all_done
36
37 See?
38
```

Goto can skip forward!

Goto can skip back!

Though skipping backward can make it hard to read your code.

See?

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Given this code, what will the player see? [*] You can use *goto to skip all around. I try to write my games so that a *goto always moves to a label lower down in the game's text, for the sake of my sanity.

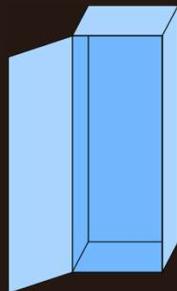
NEST CHOICES BY INDENTING

```
9  *choice
10 |  #Bernice the Brave.
11 |  Bernice stands to attention. "Ready to join you!"
12 |  #Walla the Wise.
13 |  Walla nods. "Of course I'll come with you."
14 |  #Maris the Meek.
15 |  "Are you sure?" Maris asks. "Wouldn't you rather take Walla? Or Bernice?"
16 |
17 |  *choice
18 |  |  # "I'm sure, Maris."
19 |  |  Maris isn't excited about this, but sighs and says, "Fine."
20 |  |  # "I can take Bernice instead."
21 |  |  "I'd be honored to join you," Bernice says, much to Maris's relief.
22 |  |  # "Walla, why don't you come, then?"
23 |  |  "Of course," Walla says, much to Maris's relief.
24 |
```

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You can have choices inside of choices. Every time you introduce a new choice, you indent the text more.

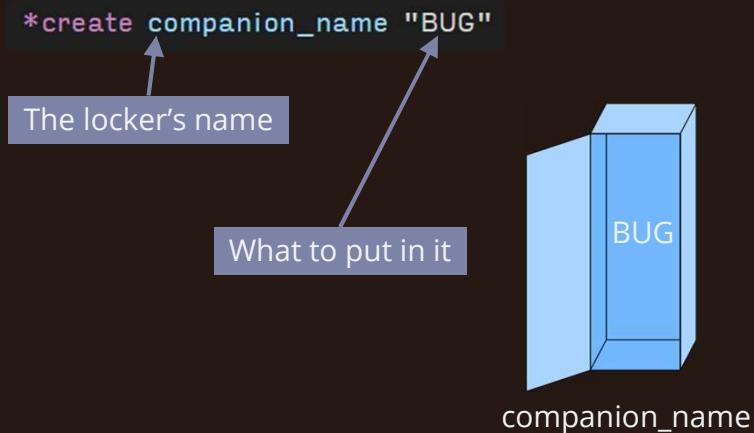
A VARIABLE IS A LOCKER THAT STORES VALUES



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A variable is a locker that stores values.

A VARIABLE IS A LOCKER THAT STORES VALUES



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First you `*create` it to give it a name. Just like `*label` gives a name to a spot in code, `*create` gives a name to a place where you'll store values.

VARIABLES STORE STRINGS, NUMBERS, OR BOOLEANS

```
*create companion_name "BUG"
```

```
*create craftiness_stat 70
```

```
*create body_temperature 98.6
```

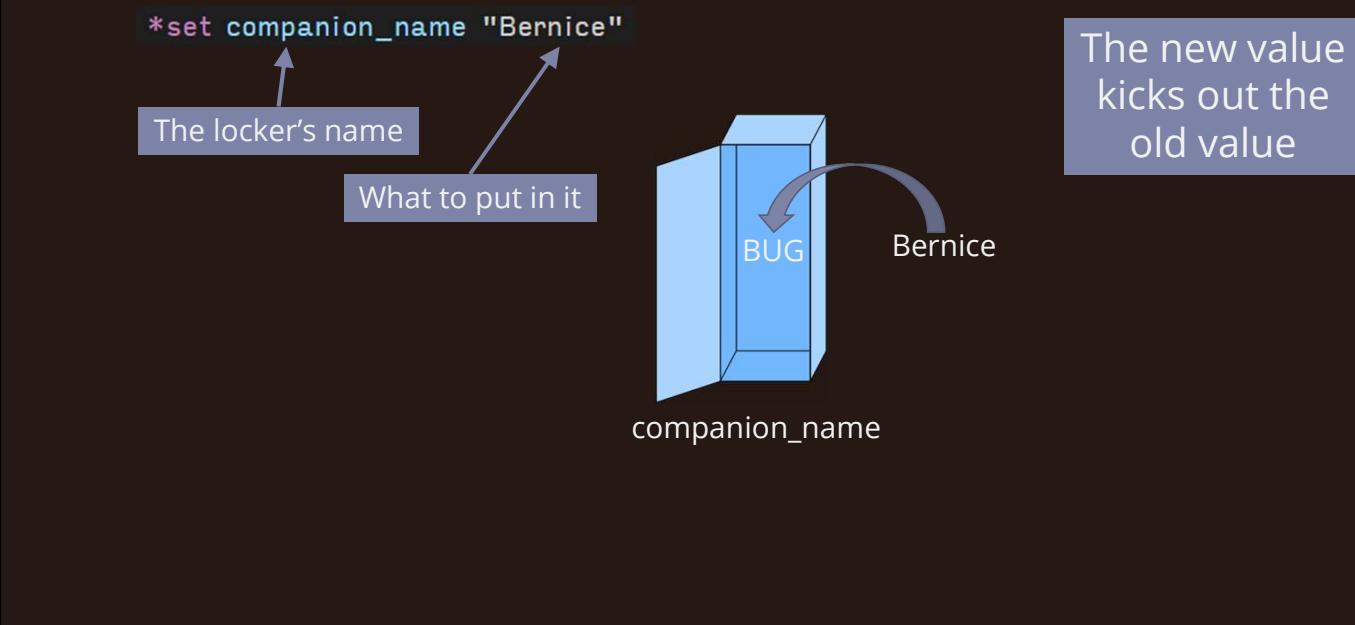
```
*create saw_the.dragon false
```

- Strings are literal text. Useful for names or other prose you want to show the player
- Numbers (which can be whole numbers or decimals) are useful for stats
- Booleans are either true or false. Useful to keep track of events

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You can store three kinds of data in a variable: a string, a number, or a boolean.

*set CHANGES WHAT'S IN A VARIABLE



The `*set` command puts a new value in the variable. The old value's lost, tossed out the airlock.

`${variable}` SHOWS A VARIABLE'S CONTENTS

```
*set companion_name "bernice"  
${companion_name} travels with you.  
${!companion_name} travels with you.
```

bernice travels with you.
Bernice travels with you.

```
*set craftiness_stat 70  
Your craftiness is ${craftiness_stat}.
```

Your craftiness is 70.

```
*set saw_the_dragon true  
Saw the dragon is ${saw_the_dragon}.  
Saw the dragon is ${!saw_the_dragon}.
```

Saw the dragon is true.
Saw the dragon is True.

Add ! to capitalize the variable's contents

*if SHOWS THE TEXT IF THE CONDITION IS TRUE

*if companion_name = "bernice"	The variable's value is equal to
"I can't wait to see this dragon!"	
*if companion_name != "bernice"	The variable's value isn't equal to
You wish Bernice were with you.	
*if craftiness_stat > 50	The value is more than
You sneak past the dragon.	
*if craftiness_stat >= 50	The value is equal to or more than
You sneak past the dragon.	
*if craftiness_stat < 50	The value is less than
The dragon hears you!	
*if craftiness_stat <= 50	The value is less than or equal to
The dragon hears you!	
*if saw_the_dragon	The value is true
You think back to when you saw the dragon.	
*if not(saw_the_dragon)	The value is false
You wish you'd see the dragon.	

GLUE CONDITIONS TOGETHER WITH and, or

```
*if not(saw_the_dragon) and not(mentioned_the_dragon)  
    Whoa! A dragon!
```

Both conditions must be true

```
*if saw_the_dragon or mentioned_the_dragon  
    There's the dragon again.
```

Either condition may be true

HANDLE OTHER POSSIBILITIES WITH *elseif, *else

1. First see if this is true

```
*if companion_name = "bernice"
    "I can't wait to see this dragon!"
*elseif companion_name = "walla"
    "We will have to be clever in dealing with this dragon," Walla says.
*else
    "What if we didn't go to the dragon?" Maris asks.
```

HANDLE OTHER POSSIBILITIES WITH *elseif, *else

```
*if companion_name = "bernice"
    "I can't wait to see this dragon!"
*elseif companion_name = "walla"
    "We will have to be clever in dealing with this dragon," Walla says.
*else
    "What if we didn't go to the dragon?" Maris asks.
```

1. First see if this is true

1a. If so, then show this, and be done with this *if block

HANDLE OTHER POSSIBILITIES WITH *elseif, *else

```
*if companion_name = "bernice"
    "I can't wait to see this dragon!"
*elseif companion_name = "walla"
    "We will have to be clever in dealing with this dragon," Walla says.
*else
    "What if we didn't go to the dragon?" Maris asks.
```

1. First see if this is true

1a. If so, then show this, and
be done with this *if block

2. If the first test isn't
true, see if this one is

HANDLE OTHER POSSIBILITIES WITH *elseif, *else

```
*if companion_name = "bernice"
    "I can't wait to see this dragon!"
*elseif companion_name = "walla"
    "We will have to be clever in dealing with this dragon," Walla says.
*else
    "What if we didn't go to the dragon?" Maris asks.
```

1. First see if this is true

1a. If so, then show this, and be done with this *if block

2. If the first test isn't true, see if this one is

2a. If it is, then show this and be done with this *if block

HANDLE OTHER POSSIBILITIES WITH *elseif, *else

```
*if companion_name = "bernice"
    "I can't wait to see this dragon!"
*elseif companion_name = "walla"
    "We will have to be clever in dealing with this dragon," Walla says.
*else
    "What if we didn't go to the dragon?" Maris asks.
```

1. First see if this is true

1a. If so, then show this, and
be done with this *if block

2. If the first test isn't
true, see if this one is

2a. If it is, then show this and
be done with this *if block

3. If all *if and *elseif tests
are false, then show this

@{ } IS A MULTIREPLACE

Look at the number in this variable

```
@{companion_e} "I can't wait to see this dragon!"  
Bernice says. | "We will have to be clever in dealing  
with this dragon," Walla says. | "What if we didn't go  
to the dragon?" Maris asks. }
```

@{ } IS A MULTIREPLACE

Look at the number in this variable

If it's 1, show this

```
@{companion_e "I can't wait to see this dragon!"  
Bernice says.| "We will have to be clever in dealing  
with this dragon," Walla says.| "What if we didn't go  
to the dragon?" Maris asks.}
```

@{ } IS A MULTIREPLACE

Look at the number in this variable

If it's 1, show this

```
@{companion_e "I can't wait to see this dragon!"  
Bernice says.|"We will have to be clever in dealing  
with this dragon," Walla says.|"What if we didn't go  
to the dragon?" Maris asks.}
```

If it's 2, show this

@{ } IS A MULTIREPLACE

Look at the number in this variable

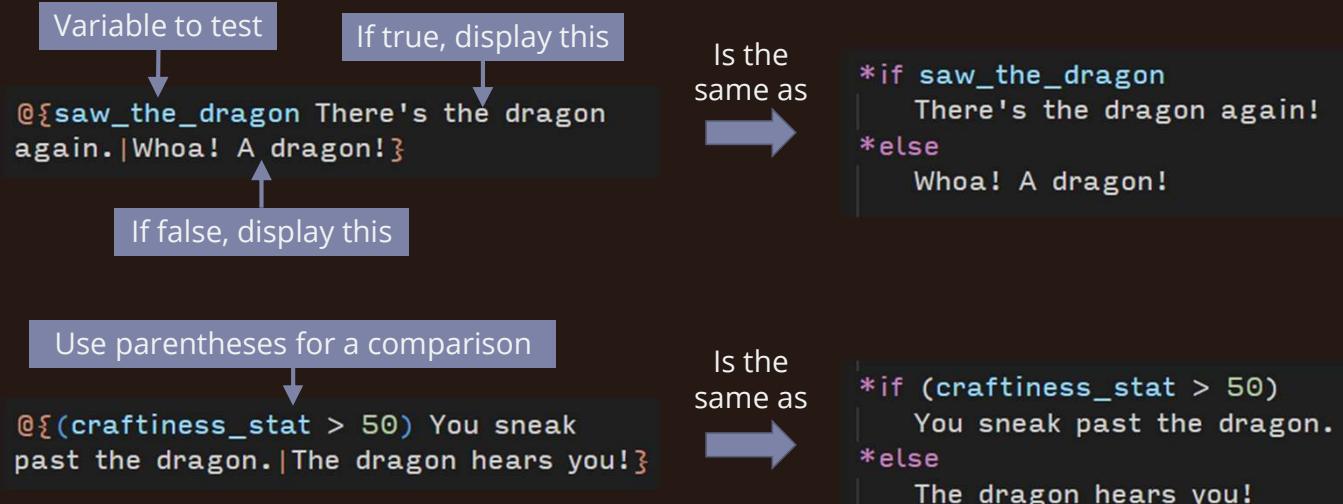
If it's 1, show this

```
@{companion_e "I can't wait to see this dragon!"  
Bernice says.| "We will have to be clever in dealing  
with this dragon," Walla says.| "What if we didn't go  
to the dragon?" Maris asks.}
```

If it's 2, show this

If it's 3, show this

THE ELEMENTS OF A TRUE/FALSE MULTIREPLACE



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If you [*]test a boolean variable, one that holds either true or false, then the [*]first text is shown if the variable is true, and the [*]second text is shown if the variable is false. Instead of a boolean variable, you can [*] use a comparison, just like in an *if statement. In fact, the multireplace is just a more compact version of an [*] *if/*else block.

@{ } WITH A NUMBER IS ALSO LIKE *if/*else

```
@{companion_e "I can't wait to see  
this dragon!" Bernice says.|"We will  
have to be clever in dealing with this  
dragon," Walla says."What if we  
didn't go to the dragon?" Maris asks.}
```



```
*if companion_e = 1  
    "I can't wait to see this dragon!"  
    Bernice says.  
*elseif companion_e = 2  
    "We will have to be clever in  
    dealing with this dragon," Walla  
    says.  
*elseif companion_e = 3  
    "What if we didn't go to the  
    dragon?" Maris asks.
```

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The same is true for a multireplace where the variable has a number.

*SET WITH AN OPERATOR ADJUSTS A VARIABLE'S VALUE

- *set trait_wise + 10 → Add 10 to the number in the variable
- *set trait_wise - 10 → Subtract 10 from the number in the variable
- *set trait_wise * 2 → Multiply the number in the variable by 2
- *set trait_wise / 2 → Divide the number in the variable by 2
- *set trait_wise %+ 10 → Fairmath add 10 to the # in the variable
- *set trait_wise %- 10 → Fairmath subtract 10 from the # in the variable

The result is saved in the variable

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The CS operators include add, subtract, multiply, divide. But [*] what about these? They're Fairmath operators. Fairmath solves a specific problem in Choicescript games.

FAIRMATH MAKES PERCENT STATS EASIER

- Stats in Choice of Games games are usually numbers between 0 and 100: a percentage!
- How do you keep the stats from going over 100 or below 0?
- For linear stats (aka “numbers go up”), how do you make early gains easier than later gains?
- For opposed pairs (like blunt vs. subtle), how do you reward consistent choices while allowing changes later?

USE FAIRMATH TO STAY BETWEEN 0 AND 100

- Addition

- The closer the value is to 100, the less it increases by
 - $75 \%+ 10 = 77 \rightarrow$ A change of +2
 - $50 \%+ 10 = 55 \rightarrow$ A change of +5
 - $25 \%+ 10 = 32 \rightarrow$ A change of +7

- Subtraction

- The closer the value is to 0, the less it decreases by
 - $75 \% - 10 = 68 \rightarrow$ A change of -7
 - $50 \% - 10 = 45 \rightarrow$ A change of -5
 - $25 \% - 10 = 23 \rightarrow$ A change of -2

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For addition, the closer to 100 you are, the less the value changes by. For subtraction, the closer to 0 you are, the less the value changes by.

MY INTUITION ABOUT FAIRMATH

- Fairmath addition will never go above 100 or below 0
- The further you are from the middle (50), the harder it is to keep going, and the easier it is to move back
 - Early adjustments have the biggest effect
 - Consistent choices change the stat, though less than before
 - Inconsistent choices for a given stat will reset it quickly
- 5 is a very small change, 10 is small, 20 is medium, 30 is large

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Here's my intuition about how fairmath works.

OPPOSED PAIR STAT

- An opposed pair is a variable that represents a continuum between two stats
- Changing the stat moves you towards one end or the other
 - Name your variable for the larger-number stat
- In this example, the larger the number in the variable, the more the player has prioritized feelings in their choices

```
*comment pathos/logos (feels/lasers)  
*create trait_pathos 50
```

Tendencies

Outgoing: 50%	Reserved: 50%
Pathos: 50%	Logos: 50%

```
*set trait_pathos %+ 10
```

Tendencies

Outgoing: 50%	Reserved: 50%
Pathos: 55%	Logos: 45%

DESIGNING STATS

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Now that we've looked at ChoiceScript code, let's talk at a higher level about elements of structuring your game. And let's start with the question, "What are you communicating to the players?"

YOUR GAME SHOULD TEACH PLAYERS WHAT KIND OF GAME IT IS

- How do players know what the stats are good for?
- How do players know which stats matter?
- How do players know what effect choices will have?
- How do players see their choices reflected in the game?
- How do players know what the game is actually about?

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One of your game's jobs is to communicate what kind of game it is, from setting to tone. That's true about the mechanical underpinnings of your game, which in this case are stats and choices. You have to manage player's expectations. That's a very big topic to tackle all at once, so let's start with players' possible expectations regarding stats.

POTENTIAL EXPECTATIONS REGARDING STATS

- Each stat matters
- No one stat will overshadow all others
- I'll have a chance to affect those stats
- The stats aren't muddled or confusing
- The stats make sense in combination

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Psst, I'll note that you can create an interesting game by deliberately violating one or more of these expectations. But I'm assuming you're interested in writing a more commercial Choicescript game. Good news! There are established ways to answer these expectations.

POTENTIAL EXPECTATIONS REGARDING STATS

- Each stat matters
 - Fewer stats so that they all play a role
- No one stat will overshadow all others
 - Mix the stats that are required to pass checks
- I'll have a chance to affect those stats
 - Fewer stats, since choices are limited
- The stats aren't muddled or confusing
 - Stats don't have overlapping domains
- The stats make sense in combination
 - Stats don't counteract each other

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These can be boiled down to two guidelines: (1) fewer stats that (2) play well with each other.

STRIVE FOR FEWER STATS, LITTLE OVERLAP, SENSIBLE COMBINATIONS

Excavation: 50%
Interviewing: 50%
Archival Research: 50%
Grammarian: 50%
Scientist: 50%
Rhetoric: 50%
Fighting: 45%
Intuitive: 50%
Analytical: 50%
Flexible: 50%
Methodical: 50%
Cunning: 50%
Honorable: 50%
Fame: 50%
Service: 50%
Style: 50%
Substance: 50%
Piety: 55%
Determination: 55%
Lore: 40%
Scholastic Appeal: 50%
Popular Acclaim: 50%
Gravitas: 40%
Heroic Deeds: 25%

- How many choices will I need to make to affect these 18 stats?
- Choices normally offer 3-5 options, so will I hit choices where none of my stats help?
- If your Lore is low, can you still be good at Archival Research?
- Can you have low fame and high popular acclaim?

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Here's an example of a game that, to my mind, had too many stats. I would find it challenging to have enough choices for players to meaningfully change the stats, and would have trouble avoiding choices where the player would likely fail because none of their good stats applied. (from Chronicon Apocalyptic)

STRIVE FOR FEWER STATS, LITTLE OVERLAP, SENSIBLE COMBINATIONS

Procedural: 25%	
Intuitive: 25%	
Cunning: 25%	
Charming: 25%	
Idealistic: 50%	Cynical: 50%
Empathetic: 50%	Indifferent: 50%
Ambitious: 50%	Stable: 50%
Honorable: 50%	Shameless: 50%
Cautious: 50%	Maverick: 50%
Loner: 50%	Share: 50%
Squeamish: 50%	Bloodthirsty: 50%
Cash: 250	
Story Points: 25%	
Renown: 0%	
Career: 0%	
Popularity: 0%	
Integrity: 0%	
Pride: 0%	
Job Security: 0%	
Care of Your Cloak: 0%	
Selection Likelihood: 0%	

- Can you be cynically empathetic? Shamelessly idealistic?
- How different are idealistic, honorable, and empathetic? How do those differ from the integrity meter?
- If you choose between betraying a confidence or hiding the truth, which stats might it affect?

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Thinking through your stats in combination can show you how they conflict, especially personality traits, and how they will confuse players. I find it useful to combine each stat with all other stats to see if they still make sense, or are even distinct. (from Death Collector)

STATS REPRESENT DIFFERENT CONCEPTS

- Skills
 - Things I can do
- Personality
 - How I do things
- Resources
 - Expendables (money; number of favors someone owes me)
- Relationships
 - How much do people vibe with me?
- Progress towards goals

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One thing to keep in mind is that stats can represent different concepts. Deciding what concepts your stats represent can guide you in selecting them.

Let's see how you can apply these guidelines when creating your stats.

I CHOSE SEPARATE SKILLS & PERSONALITY STATS

Skills

- Lab Skills
 - Practical magic
- Library Research
 - Looking up info about magic
- Logic
 - Reasoning about magic
- Rhetoric
 - Use your words!
- Political Insight
 - Using politics to your benefit

Personality

- Structured/Intuitive
 - Planner or pantser?
- Straightforward/Circumspect
 - Do you say what you mean?
- Steadfast/Flexible
 - How willing to make changes?
- Tweedy/Modern
 - Historic or modern approaches?

An aside: your stats should communicate the feel of your game

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When I pitched Choice of Games, I grouped my stats into skills -- numbers that go up -- and personality -- paired stats. Based on this, what do you think the game's about? How good are my stats?

MY SKILLS HAD GOOD GROUPINGS

- Lab Skills
 - Practical magic
 - Library Research
 - Looking up info about magic
 - Logic
 - Reasoning, esp. about magic
 - Rhetoric
 - Use your words!
 - Political Insight
 - Using politics to your benefit
-
- Magic Skills!
- Need to make sure Logic
doesn't become overpowered
- Interpersonal Skills!

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I like how my skills are grouped. I have a set of three magic skills and three interpersonal skills. My game's choices won't limit themselves to these two groups, but it's helped me to think of them in these groups when first considering stats-based choices.

MY INITIAL PERSONALITY STATS HAD SUBTLE PROBLEMS

- Structured/Intuitive
 - Planner or pantser?
- Straightforward/Circumspect
 - Do you say what you mean?
- Steadfast/Flexible
 - How willing to make changes?
- Tweedy/Modern
 - Historic or modern approaches?

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Then there's my personality stats. I flat-out messed these up.

MY INITIAL PERSONALITY STATS HAD SUBTLE PROBLEMS

- Structured/Intuitive
 - Planner or pantser?
- Straightforward/Circumspect
 - Do you say what you mean?
- Steadfast/Flexible
 - How willing to make changes?
- Tweedy/Modern
 - Historic or modern approaches?

Can you be flexibly structured?

Could lock players into not making new choices; stats already capture if player's changing mind often

Hard to write many good choices for this

Lesson I learned: Try writing ten sample choices that involve your stats

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Steadfast/Flexible is awful. Just awful. The stats themselves already reflect how flexible a player is being. And can you be flexibly structured? Is flexibly tweedy a thing? Urgh. And how many choices do you want to make between being traditional or not? Bleah. That taught me to try writing choices among my stats to uncover these problems before I've nearly burst a blood vessel trying to write the first chapter of my game.

How I FIXED MY PERSONALITY STATS

Before

- Structured/Intuitive
 - Planner or pantser?
- Straightforward/Circumspect
 - Do you say what you mean?
- Steadfast/Flexible
 - How willing to make changes?
- Tweedy/Modern
 - Historic or modern approaches?

After

- Outgoing/Reserved
 - Do you show your feels?
- Pathos/Logos
 - Feels or logic?
- Self/Others
 - Philantia or philia?
- Driven/Relaxed
 - Type A or surfer?

Overlaps w/Logic skill;
used description & how it's
applied to differentiate

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I threw those personality stats away and went for ones that, in my estimation, worked better in combination and led to interesting player choices. The pathos/logos stat is the only one that can cause notable confusion, as I have a logic skill. To help players understand that logic is a skill and feels/lasers are what you focus on and how you approach the world, I communicate that on the stats page in describing them and also in the language I use in option text.

MY FINAL SKILLS & PERSONALITY STATS

Skills

- Lab Skills
 - Practical magic
- Library Research
 - Looking up info about magic
- Logic
 - Reasoning about magic
- Rhetoric
 - Use your words!
- Political Insight
 - Using department politics

Personality

- Outgoing/Reserved
 - Do you show your feels?
- Pathos/Logos
 - Feels or logic?
- Self/Others
 - Philantia or philia?
- Driven/Relaxed
 - Type A or surfer?

Try combos: can you be driven & use political insight? Reserved but focusing on feels?

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Here's my final skill and personality stats that I actually used in my game. After I changed my stats, writing the game became much easier.

DESIGNING CHOICES

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That's a lot of discussion of stats; what about the choices players make during your game?

POTENTIAL EXPECTATIONS REGARDING CHOICES

- I'll have interesting choices to make
- There won't be one obvious good (or least-bad) option
- I'll have some idea of what choices will do to the story and stats

81

As with stats, players have expectations about choices. The second point is a more specific case of the first: a single obvious good option doesn't make for an interesting choice. Ideally you offer options where the player is tempted by multiple ones.

These expectations suggest solutions.

POTENTIAL EXPECTATIONS REGARDING CHOICES

- I'll have interesting choices to make
 - Communicate the effect the player's choices have
- There won't be one obvious good (or least-bad) choice
 - Group choice options so players are tempted by multiple ones
- I'll have some idea of what choices will do to the story and stats
 - How you word choice options should give clues
 - Use a consistent approach to setting up choices and their consequences

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Let's look at how you communicate the effect of players' choice. The answer that most everyone reaches to first is to branch the story.

BRANCHING ISN'T THE ONLY WAY TO ACKNOWLEDGE PLAYER CHOICES

- Players can't see branches unless you point them out!
- Give the player obvious and mutually-exclusive goals to work towards
- Let players act, not just react
- People often role-play in games—they want to make consistent choices
- It sometimes really is about the friends we make along the way

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That doesn't have to be the hammer in search of every nail. Players can miss that a game branches! They don't see the path they didn't take. But if they have clear goals that conflict or cannot all be done, then they realize that choosing to work towards one goal is to ignore the other. Let them act, instead of solely reacting to events. Give them the opportunity to role-play a person in the world by giving them the chance to make choices that reflect who their person is. And finally, consider the other characters in the game world.

WHAT MAKES CHOICES FEEL IMPORTANT?

- In general, players feel that choices matter if they think the choices will **change the state of the world**
- Do choice outcomes differ in:
 - Physical space? (Let someone explain the mystery / Go to the library to look up sources yourself)
 - Time? (Frontal assault / Sneak in)
 - Goals? (Help the wounded guard / pursue the robber)
 - Characters? (Ask a friend for help / go it alone)
 - Items? (Take a spellbook / take a gun)

"Foreseeing Meaningful Choices", Cardona-Rivera *et. al.*, *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. Vol. 10. No. 1. 2014.

84

Players want their choices to be reflected in the game world. We reach for branching to reflect player choices because we think that's altering the game world, and it is, but not in ways that the player will necessarily notice. Here's some fun academic research on what makes people feel like a choice matters. What's fun is that these don't necessarily require large separate branches to implement! In the example of "help the wounded guard or pursue the robber," you can have the player fail to catch the robber in both cases, leading to the same next story beat. But if you chose the second option, maybe the guard dies and your relationship with a compassionate friend deteriorates as captured by a stat.

NOT ALL CHOICES MUST CHANGE THE GAME WORLD

- Reflective choices don't have mechanical effects on the story world
- Reflective choices let players choose *why* they do something
- Two strong types
 - Let players express their own values, opinions, or feelings
 - Ask players to determine what kind of person their character is
 - People like to roleplay!

<input checked="" type="radio"/>	I truthfully say, "That does sounds fascinating."
<input type="radio"/>	I lie and say, "That sounds fascinating."
<input type="radio"/>	"I wonder if you could apply that to my research."

85

That said, not every choice has to change the game world. Reflective choices -- *why* a player does something - - can be powerful as well.

THE “SET, CHECK, OR GATE” PROBLEM

- Is a choice going to **set** a stat, as a way of changing skill amounts or (especially) establishing character?
 - If I jump out of the airplane, that ups my “Daring” stat
- Is it going to **check** a stat to determine if the player has the personality or skills to pull off an approach?
 - Am I daring enough to successfully jump out of the airplane?
- Is it going to **gate** choices where I can’t select them?
 - I’m not daring enough to choose to jump out of the airplane

86

Here's a fun way that stats interact with choices. It's what the interactive narrative writer and theorist Emily Short has called the "set, check, or gate problem." It's not always easy to know if a choice will set a stat, check the stat to see if you succeed, or not even let you choose an option because of a stat.

SET OR CHECK?

It is time. The dragon awaits. Who will you take with you on this epic adventure?

Bernice the Brave.

Walla the Wise.

Maris the Meek.

Would you expect this choice to **set** a stat?

87

Think back to the first choice in our sample game. Would you expect this choice to set stats? Why or why not?

SET OR CHECK?

Now that it's time to ask him out on a date, you're not sure of your best approach.

- Boldly ask the dragon on a date.
- Wisely see if the dragon is in a good mood.
- Meekly request that the dragon consider going on a date with you.

Would you expect this choice to **set** a stat? Or **check** a stat?

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What about this second choice? Does it set a stat? Check a stat? Do nothing with stats?

SET OR CHECK?

Demeanor

Domineering: 50% Accommodating: 50%

Manipulative: 50% Direct: 50%

Progressive: 50% Traditional: 50%

Skills

Poise (Unremarkable): 25%

Intrigue (Unremarkable): 25%

Wit (Unremarkable): 25%

Flair (Unremarkable): 25%

Spirit (Unremarkable): 25%

"Excuse me," someone behind you snaps, and shoves past you for the train door.

- I step aside, allowing them to pass.
- I glower in their direction.
- I shove them back with a sharp elbow.
- I call out. "There's no need to be so rude!"

Set

From Crème de la Crème, by Hannah Powell-Smith

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Let's look at some example choices from Crème de la Crème, Hannah Powell-Smith's excellent game about being a student at a prestigious private school for socialites.

SET OR CHECK?

Demeanor

Domineering: 50% Accommodating: 50%

Manipulative: 50% Direct: 50%

Progressive: 50% Traditional: 50%

Skills

Poise (Unremarkable): 25%

Intrigue (Unremarkable): 25%

Wit (Unremarkable): 25%

Flair (Unremarkable): 25%

Spirit (Unremarkable): 25%

Your entrance essay must have been one of the latest ones to arrive. One afternoon, your parents sat you down to write four sides of paper about a time when you achieved something great before the evening post went out. At first, your mind went blank, but then you settled on:

- Rescuing a stranger who had fallen in a canal. [Tag Spirit as a strong skill]
- Getting the highest exam results at my school. [Tag Wit as a strong skill]
- Unearthing a con artist amongst my parents' friends. [Tag Intrigue as a strong skill]
- Winning a dressage competition. [Tag Poise as a strong skill]
- Being cast as the lead in the school play. [Tag Flair as a strong skill]

Set

From Crème de la Crème, by Hannah Powell-Smith

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SET OR CHECK?

Demeanor

Domineering: 50%	Accommodating: 50%
Manipulative: 50%	Direct: 50%
Progressive: 50%	Traditional: 50%

Skills

Poise (Unremarkable): 25%
Intrigue (Unremarkable): 25%
Wit (Unremarkable): 25%
Flair (Unremarkable): 25%
Spirit (Unremarkable): 25%

"But," Hartmann says, "what about the exam requirements?"

"There's more to life than exams," Miss Dalca says. Hartmann and Freddie both look as though she has cursed in the middle of a church service.

- I remind Hartmann that it's Miss Dalca's prerogative to teach as she wishes.
- Surely the attitude doesn't matter, if the philanthropy has a good result.
- I encourage Miss Dalca to go into more detail about her opinions.
- I'd rather concentrate on my own ambitions, not worry about the lower classes.
- We need to focus on the college syllabus, regardless of personal opinions.

Check

From Crème de la Crème, by Hannah Powell-Smith

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This is a hard problem! And I've cheated by giving you the choices out of context. In context, for example, games are more likely to set stats at the beginning of the game and check them later on.

COMMON WAYS TO HANDLE SET/CHECK/GATE

- Set during buildup at story/chapter beginning; check afterwards to determine success; gate seldom.
- Set during flashbacks; check or gate in the “present”.
- Separate *skills* from *personality*. Check skills that increase with those checks; set personality rarely.
- Set during buildup/backstory. Check to determine *how* the protagonist executes a task. Gate at extremes.
- Regardless of the approach, strive for **consistency**

From Emily Short's article at <https://emshort.blog/2016/02/15/set-check-or-gate-a-problem-in-personality-stats/>

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There are many ways to tackle the set, check, or gate problem. Here are some Emily suggested in her article about the problem. Flashbacks are one fascinating way to make it clear when you're setting stats.

AN EXAMPLE FLASHBACK(ISH) CHOICE

Gonzalez waves an airy hand. "Oh, well, I was at Jeanneret International before I turned eighteen," they say, naming a staggeringly expensive boarding school on the southern edge of Westerlin. "So I'm used to being away from my parents. But it'll be nice to see some snow at Gallatin. Where were you?"

Freddie hesitates, leaving you to speak.

- Rochat's Academy, a boarding school focusing on the arts.
- Harrovian School, a prestigious and academic day school.
- Holtsfield's School, a highly religious day school.
- Olmsted Valley School, a rural, isolated boarding school.

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Here's an example from Crème de la Crème.

MY (CURRENT) APPROACH TO COMMUNICATING EXPECTATIONS

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There's no one right way to tackle this problem. Some games show you what stat they'll be testing. Most Choice of Games games don't go that route, preferring what they view as a more "readerly" presentation. So instead of telling you how to solve this problem, I'll show you how I've chosen to tackle it in my current game.

I'M USING SKILLS VS TRAITS AND FLASHBACKS

Qualifications	
Labwork (Unskilled):	25%
Library Research (Unskilled):	25%
Rhetoric (Unskilled):	25%
Reasoning (Unskilled):	25%
Political Insight (Unskilled):	25%

Tendencies	
Outgoing: 50%	Reserved: 50%
Pathos: 50%	Logos: 50%
Self: 50%	Others: 50%
Driven: 50%	Relaxed: 50%

- Skills go up (including when failing a check!), and are tested for success
- Traits are tested for *how* the player succeeds
- Choices echo the words used in the stats, often in the same order

- Convince her that logically she shouldn't near-memorize patterns.
- Reason about her feelings: she won't let you embarrass her by guessing correctly.
- Win her over politically by giving in.

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I divided my stats into skills and personality traits. My first chapter is a flashback chapter (which I hope is more exciting to play than that description makes it sound), and that's where the primary personality trait setting occurs. Skills go up in that chapter, and then again in later chapters when they're checked, especially if you fail the check. I don't check personality traits for success. In options, I echo words from the stats or their description.

I USE CHOICE WORDING TO INDICATE CHECKS

Qualifications	
Labwork (Unskilled)	25%
Library Research (Unskilled)	25%
Rhetoric (Unskilled)	25%
Reasoning (Unskilled)	25%
Political Insight (Unskilled)	25%

Tendencies	
Outgoing: 50%	Reserved: 50%
Pathos: 50%	Logos: 50%
Self: 50%	Others: 50%
Driven: 50%	Relaxed: 50%

- The word “try” gets a lot of use in these checks
- Again, choice wording echoes the language used in stats
- I don’t mix skills and traits in checks

<input checked="" type="radio"/> I'm best with theoretical, logical topics. I'll try to have the symposium focus on them. Theoretical, logical: reasoning
<input type="radio"/> I understand politics. I'll try to ferret out what Taylor wants while limiting Darcy's influence. Understand politics: political insight
<input type="radio"/> I'm best with practical topics. Even though it'll help Darcy, I'll try to argue for those. Practical topics: labwork

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I especially pay attention to choice wording when it comes to stat checks. I use the word "try" a lot to signal that it's a check. I crib wording from the stats and their descriptions.

THANKS FOR COMING!

You can get this presentation and the workshop resources at
https://github.com/sgranade/cs_workshop

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