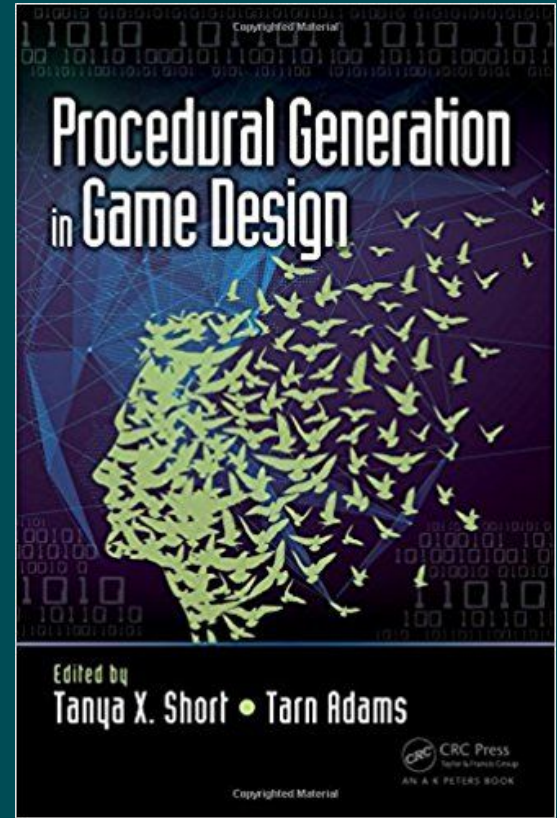
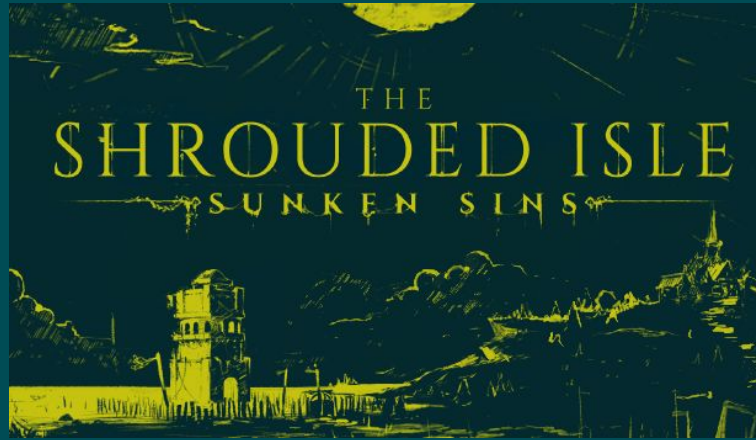
A close-up, high-angle shot of a futuristic robotic hand. The hand is composed of white, segmented fingers and joints, with blue, circular mechanical components visible at the joints. The hand is positioned over a laptop keyboard, with one finger resting on a key. The background is a blurred, dark blue-green, suggesting a digital or technological environment.

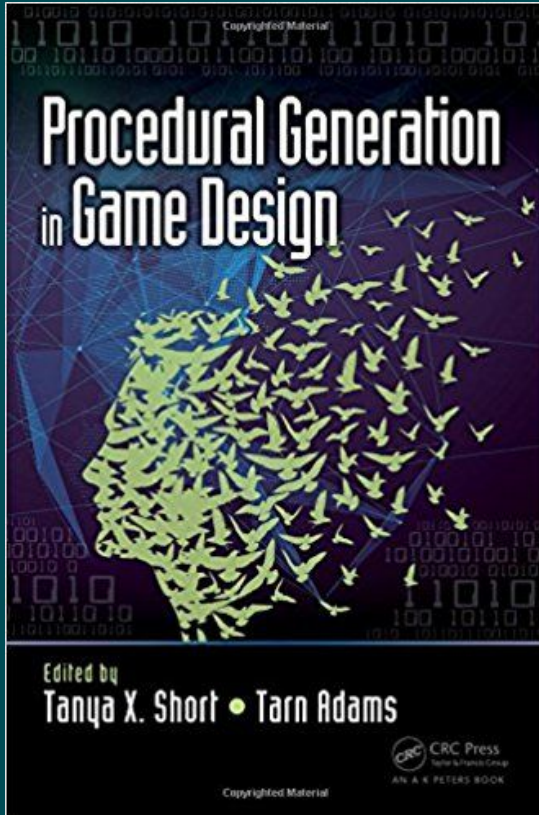
Writing Modular Characters

for System-Driven Games

Tanya X. Short
@kitfoxgames • @tanyaxshort



Tanya X. Short
@kitfoxgames • @tanyaxshort



Procedural Storytelling in Game Design (2019)

Tanya X. Short
@kitfoxgames • @tanyaxshort

Primary Sources

Emily Short (Spirit AI): @emshort

Jason Grinblat (Caves of Qud): @ptychomancer

$$A + B + C = \text{????}$$

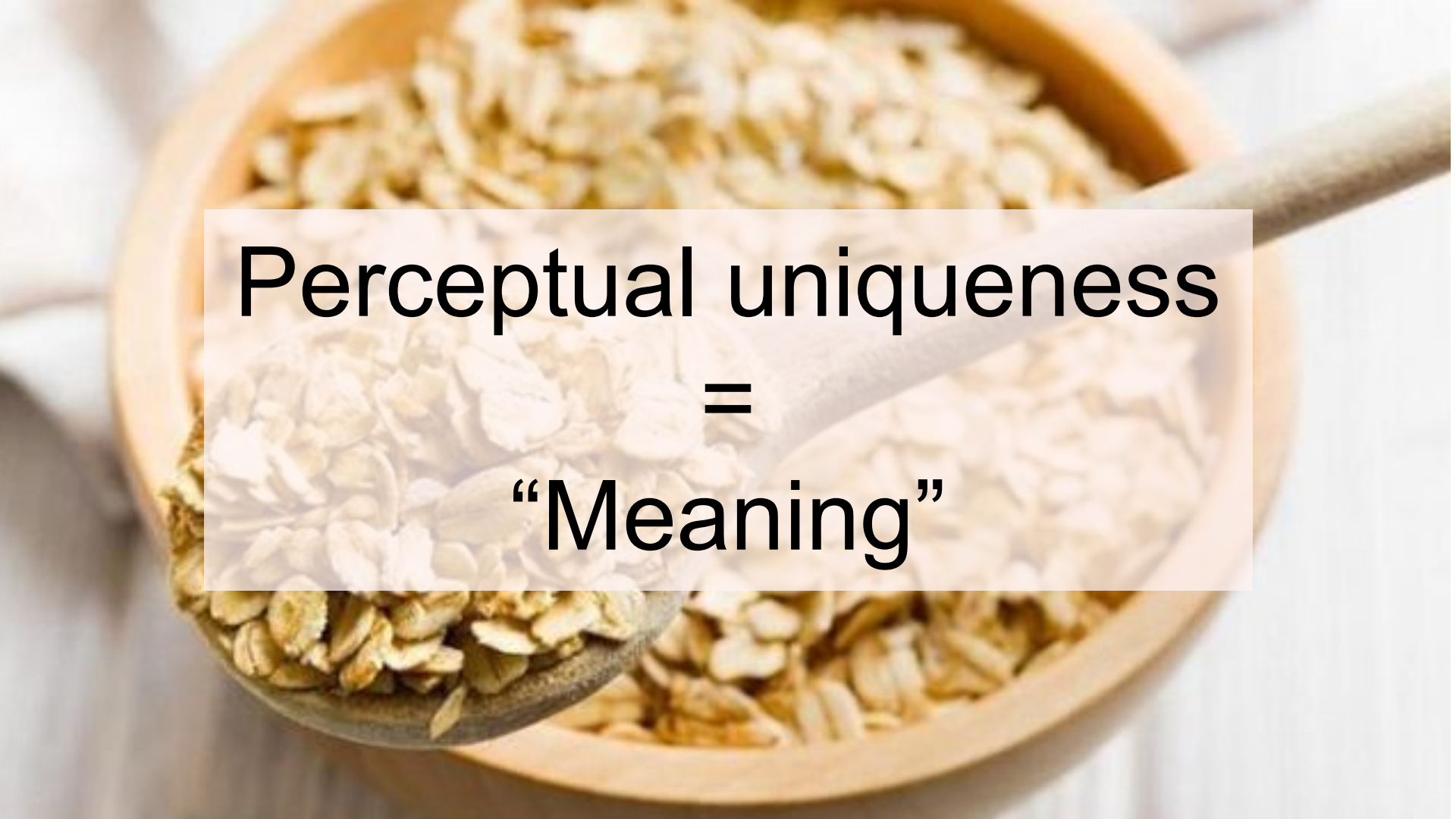
big + beautiful + smelly = ???

big + beautiful + smelly =
NPC#4241?

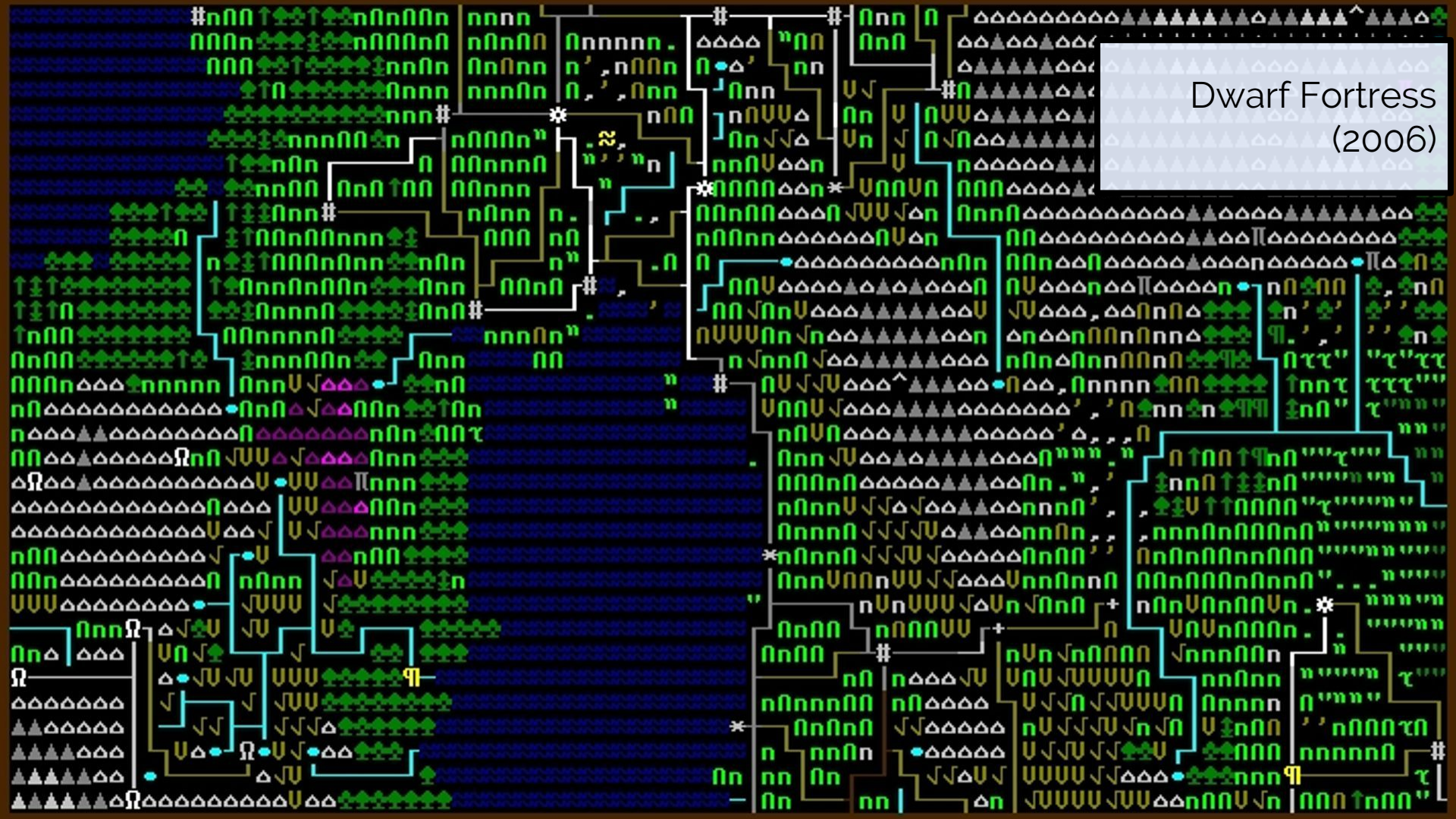


The 10,000 Bowls of Oatmeal Problem

(Kate Compton)

A close-up, high-angle photograph of a light-colored wooden bowl filled with rolled oats. A wooden spoon is resting inside the bowl, its handle extending towards the top right. The oats are light beige and have a flake-like texture. The background is a soft, out-of-focus white surface.

Perceptual uniqueness
=
“Meaning”



Dwarf Fortress
(2006)



Unknown Peoples

@neighbour_civs

Following



The Neighbouring Band. They refer to courtship as the 'refined way.' They count 947 years since the return of the Master of Moss.

10:33 PM - 6 Feb 2018

4 Retweets 12 Likes



1



4



12



Tweet your reply



Brian Swift @harborpirate · 21h



Replying to @neighbour_civs

What wonder have they built or discovered?



1



Unknown Peoples @neighbour_civs · 21h



Great works of theater are exhibited at their Fearsome Temple.



[illegible][illegible]



A crystal pyramid sits on a dark blue, reflective surface. A vibrant rainbow light beam enters from the left, passes through the pyramid, and exits as a bright white beam on the right. The pyramid's facets refract the light, creating internal rainbow patterns. The background is a deep blue gradient.

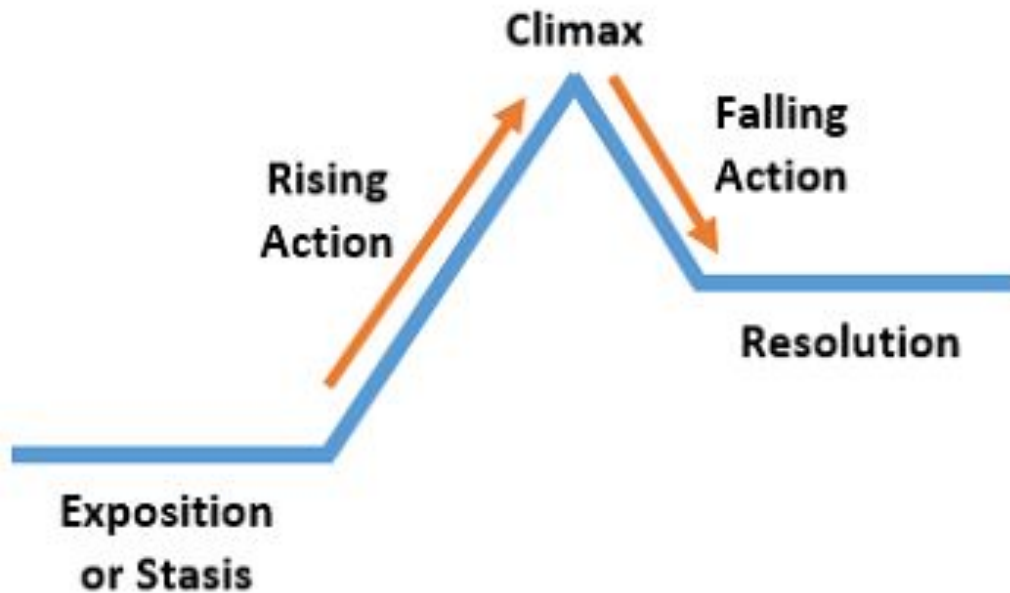
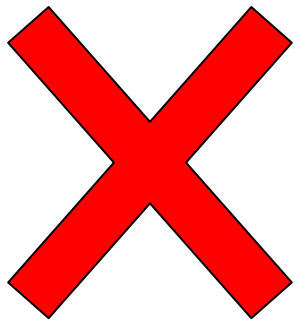
Big	Archer
Smelly	Brown hair
Beautiful	Angry at me
Level 6	Likes Fish

Oh yeah! Tim, I
remember him

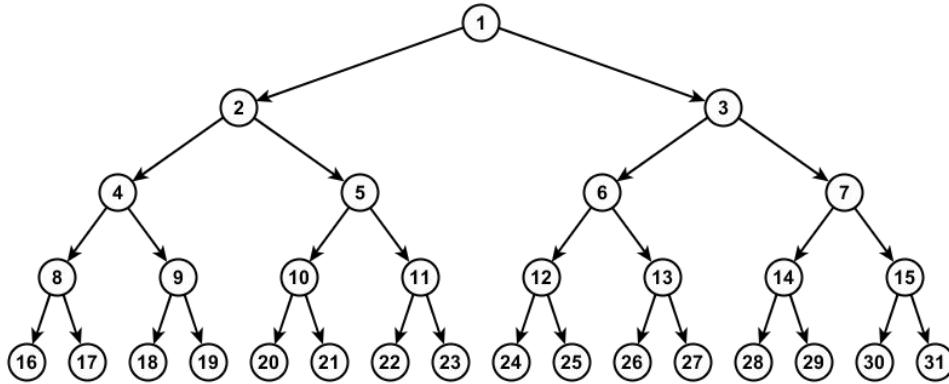
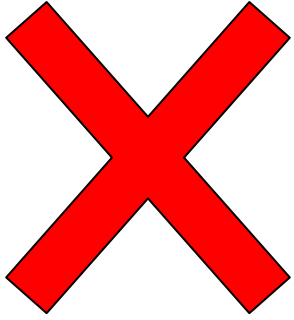
1. Build orthogonally
2. Create higher-order meaning
3. Surface meaning
4. Iterate with co-author(s)

The background is a deep black space filled with numerous stars of varying sizes and brightness. Some stars have prominent white diffraction spikes. Faint, wispy nebulae in shades of blue and purple are scattered across the field of view.

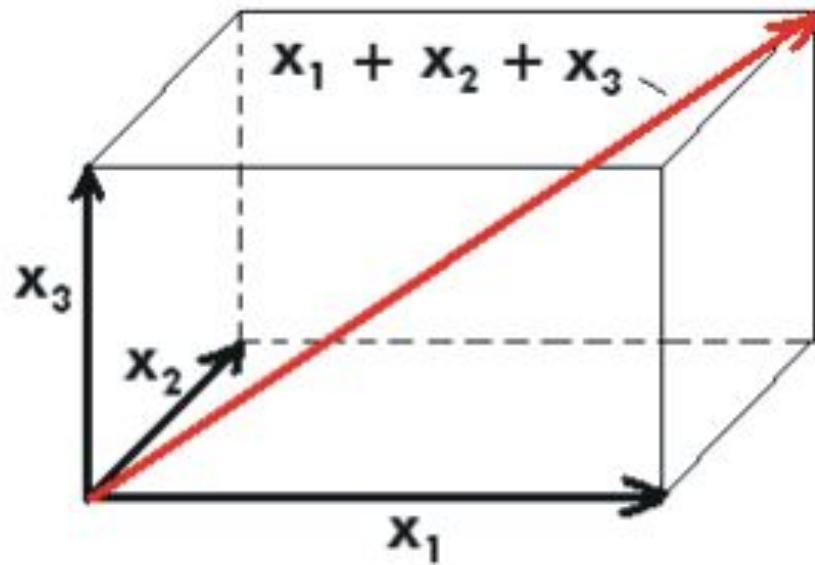
Build Orthogonally



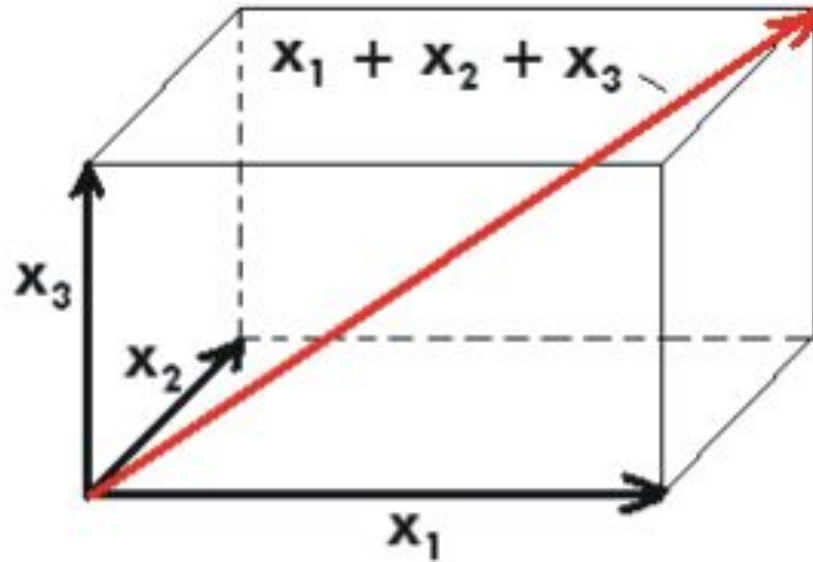
BUILD
ORTHOGONALLY



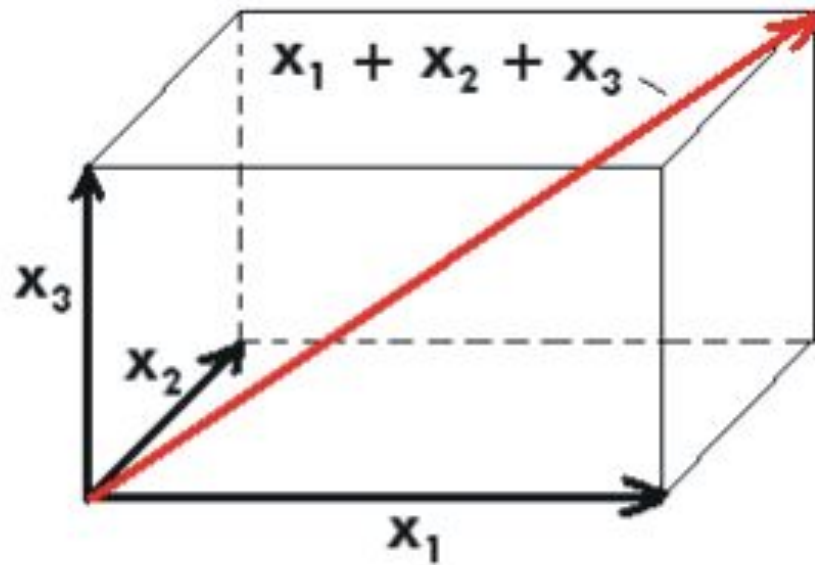
BUILD
ORTHOGONALLY



BUILD
ORTHOGONALLY

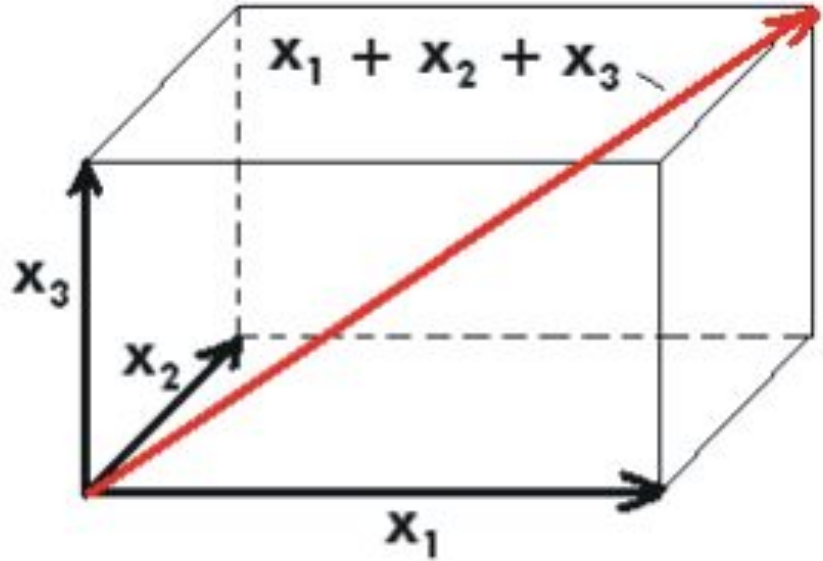


“Story volume”



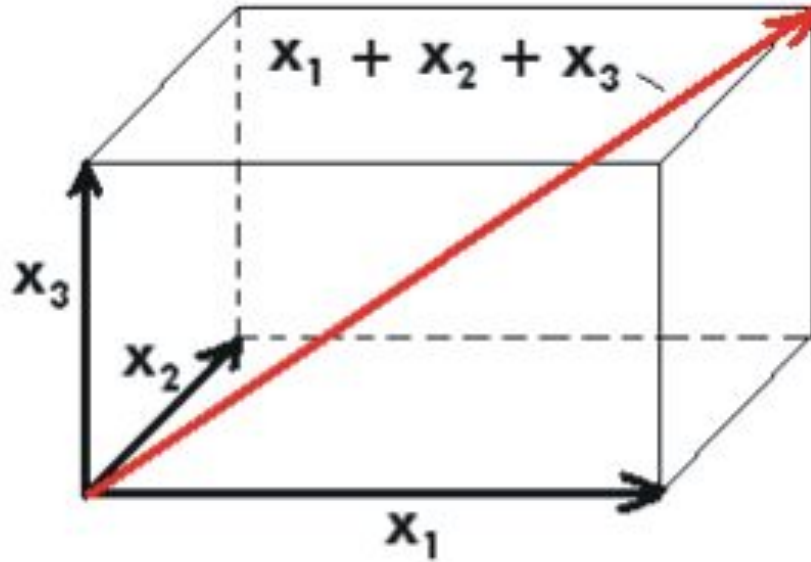
BUILD
ORTHOGONALLY

Tall, Short
Heavy, Thin



BUILD
ORTHOGONALLY

height



weight

BUILD
ORTHOGONALLY

Flirtiness
Neuroticism
Imagination
Extraversion

Flirtiness

Neuroticism

Imagination

Extraversion

Romantic interest

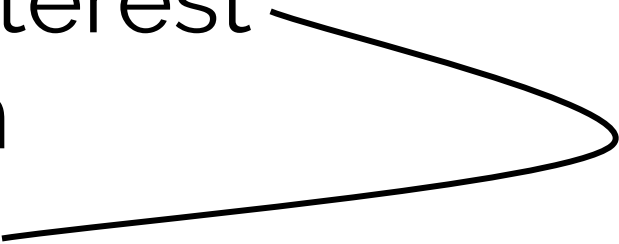
Neuroticism

Imagination

Extraversion

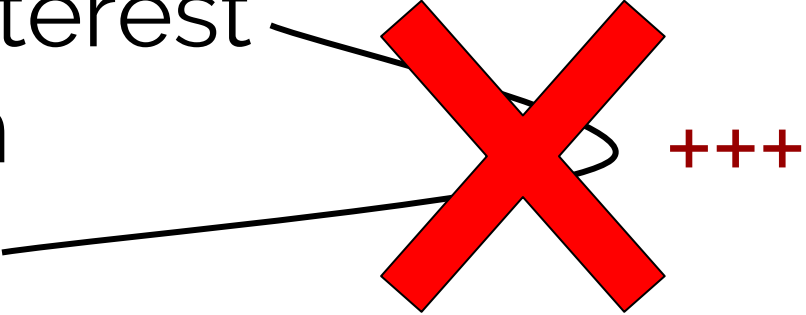
Romantic interest
Neuroticism
Imagination
Extraversion

Romantic interest
Neuroticism
Imagination
Extraversion




+++

Romantic interest
Neuroticism
Imagination
Extraversion



+++

A close-up of Zunn the Poet, a Marauder Marksman from the game Middle-earth: Shadow of Mordor. He is an orc with a pale, yellowish-green complexion, green eyes, and a wide, toothy grin. He wears a brown, pointed hat with a metal band and a dark, leather-like vest over a red tunic. He is holding a bow in his right hand, and several arrows are visible in the background. The background is a dark, rocky landscape with some green moss.

Middle-earth:
Shadow of Mordor
(2014)



Zunn the Poet
Marauder Marksman

**BUILD
ORTHOGONALLY**

The Shrouded Isle (2017)

The Gathering Convenes...
Who will be the Sacrifice this Season?



PREBEN KEGNNI

🕵️▲Ignorant?
👉▼**Kleptomaniac** (-30)



KAREL IOSEFKA

👉▲Disciplined?
👉▼**Impulsive** (-20)



VASILISA CADWELL

👉▲Full of Fervor?
👉▼**Weasel** (-20)



ZAYNA EFFERSON

👉▲**Ascetic** (+15)
???????



CHESSA BLACKBORN

👉▲**Lawful** (+10)
👉▼**Knows too much?**

BUILD
ORTHOGONALLY



Argali the Ox

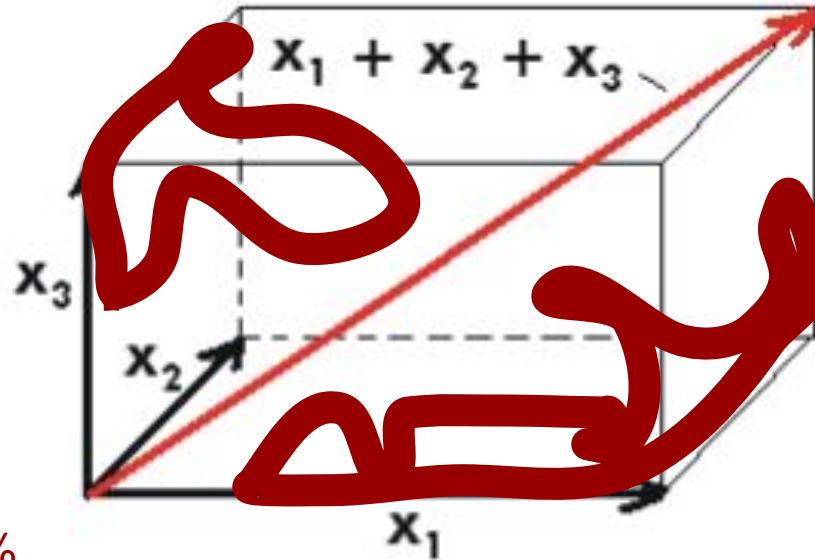
Ancient stories claim that Argali never stopped stargazing and eventually became a world-renowned astronomer, discovering more constellations than anyone since.

Then Argali spoke often of the importance of human comforts, delighting in good food and family.

Moon Hunters
(2016)



outgoing = -10% solo video games owned
+10% friends



Ambition = more likely
to be hardworking

imagination = more
likely romantic interest

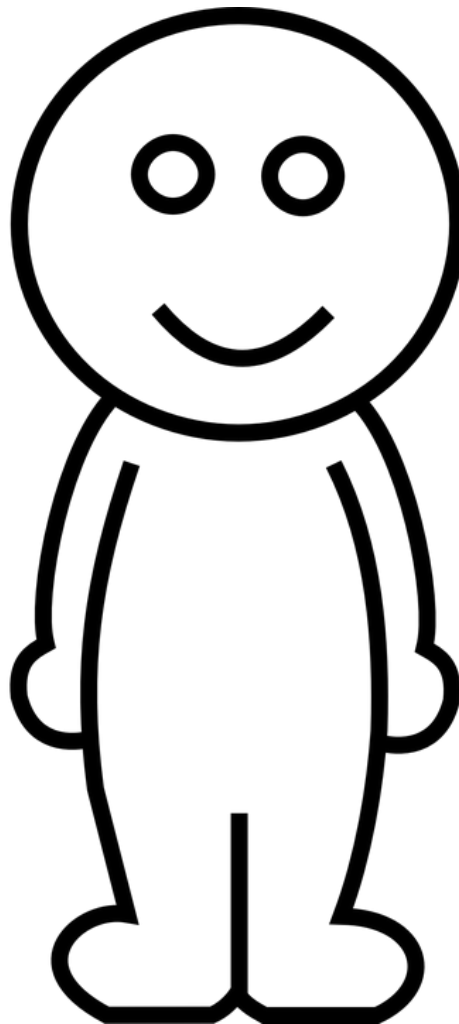
Canadian = +500%
apologizing skill

neurotic = more likely sweaty

BUILD
ORTHOGONALLY

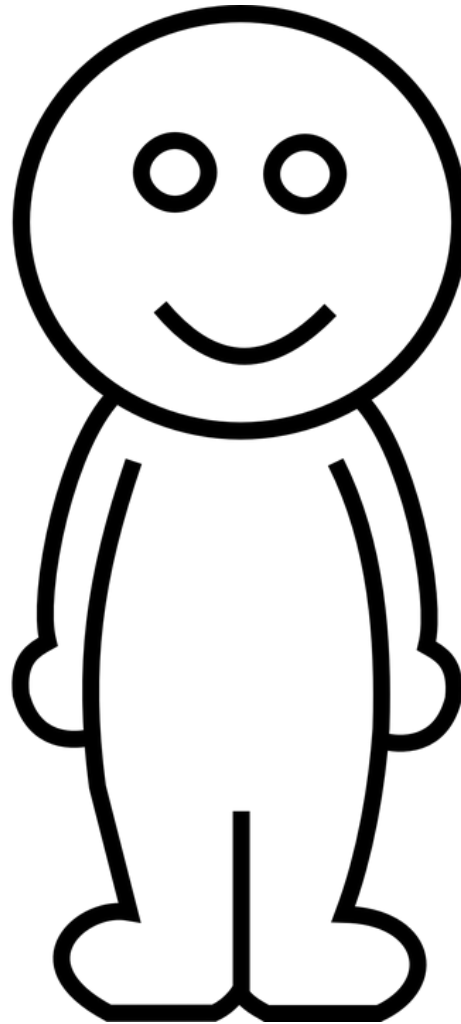
**Create Higher-Order
Meaning**

Physical attributes
Personality
Behaviour
Occupation
Hobbies
Memories
Relationships
Opinions
Secrets
Character arc/transformations



HIGHER-ORDER
MEANING

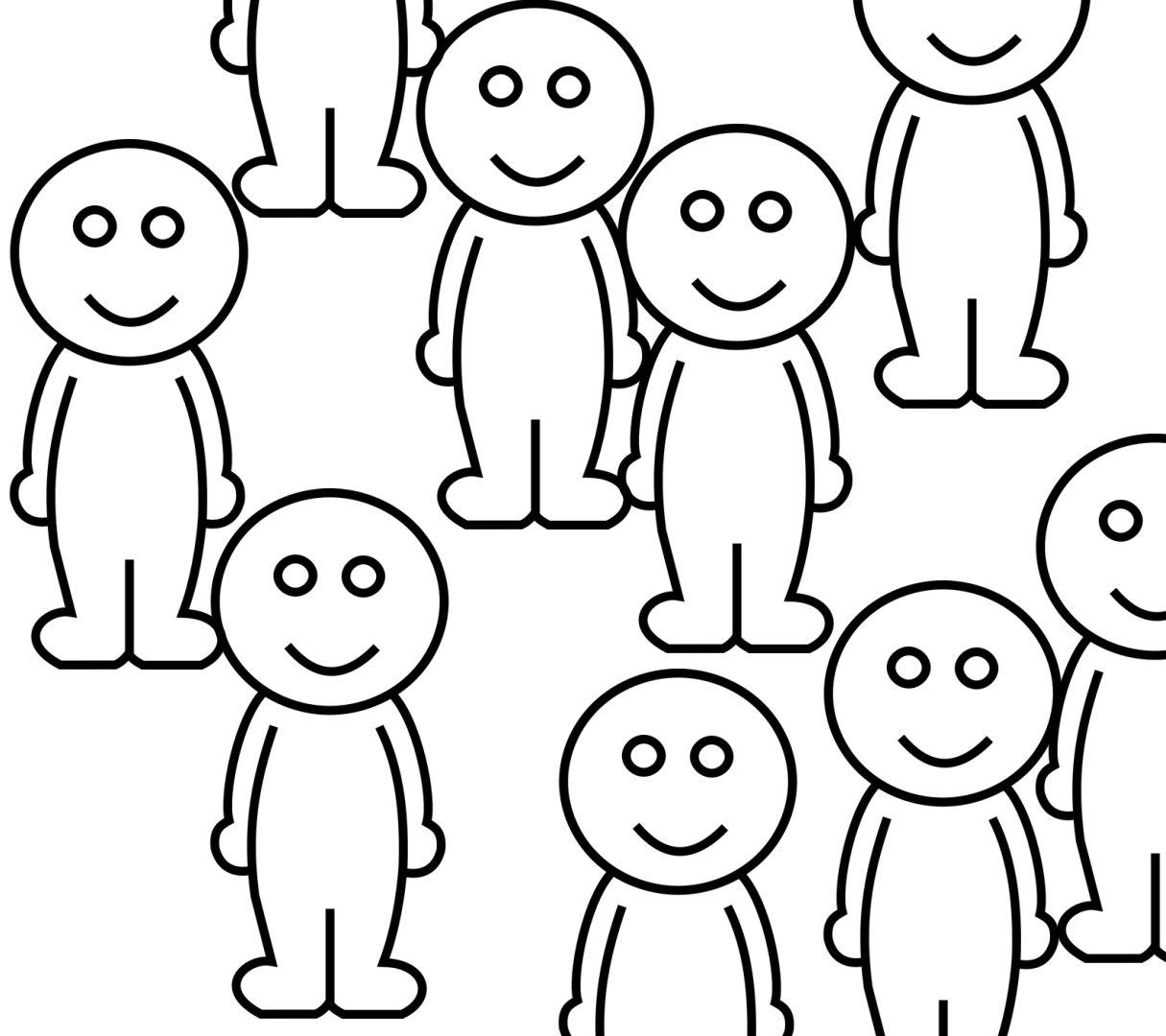
Physical attributes
Personality
Current Status
Occupation
Hobbies
Memories
Relationships
Opinions
Secrets
Character arc
Childhood



Tall, wide
Outgoing, neurotic
Flying a starship
Pilot
Plays video games
Fond of home planet
In love affair
Enjoys political debate
Stole co-pilot's lunch yesterday
Slowly becoming jaded
Loving older sister

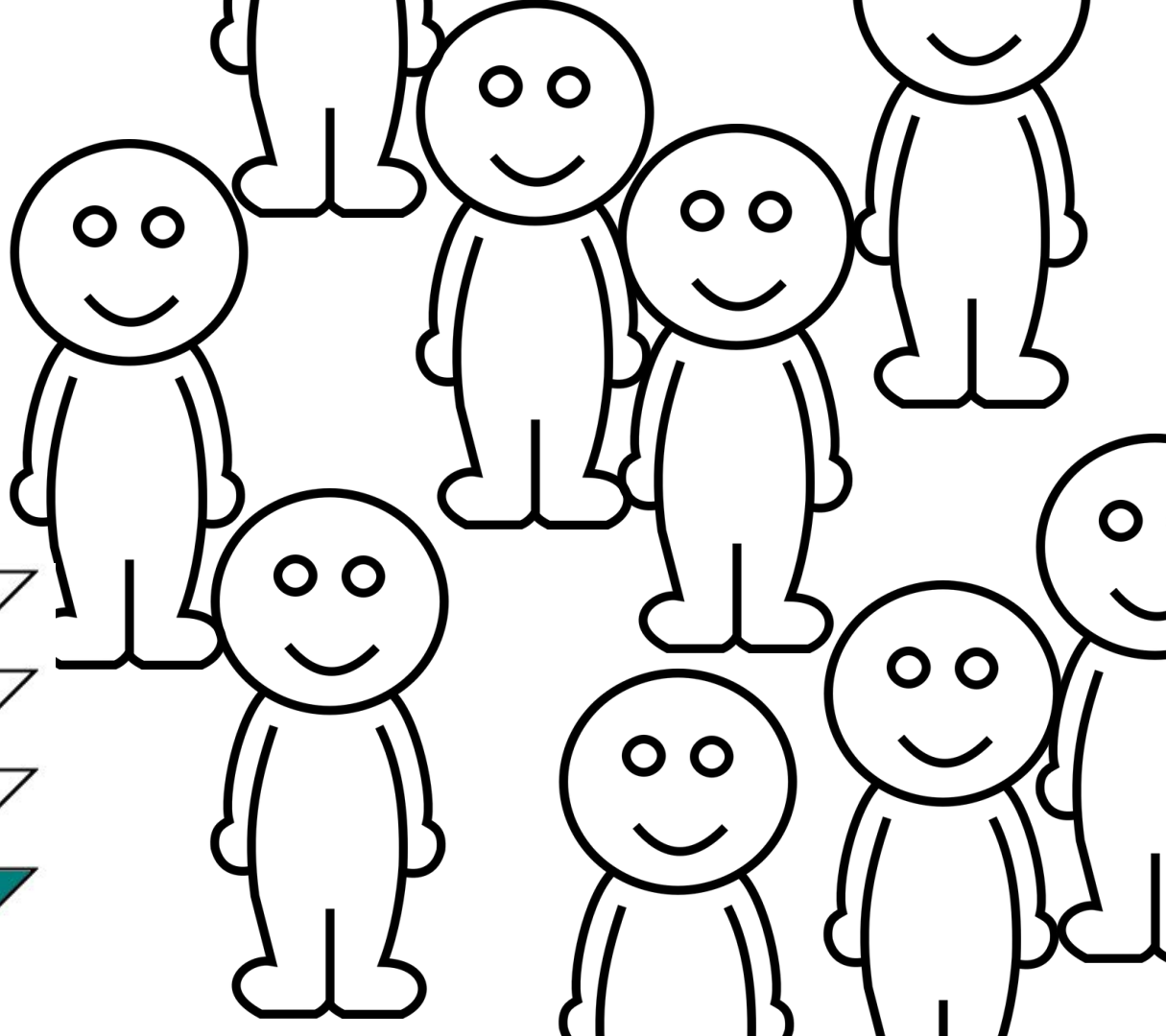
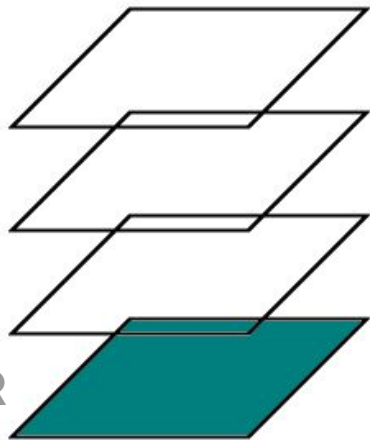
HIGHER-ORDER
MEANING

Physical attributes
Personality
Current Status
Occupation
Hobbies
Memories
Relationships
Opinions
Secrets
Character arc
Childhood



HIGHER-ORDER
MEANING

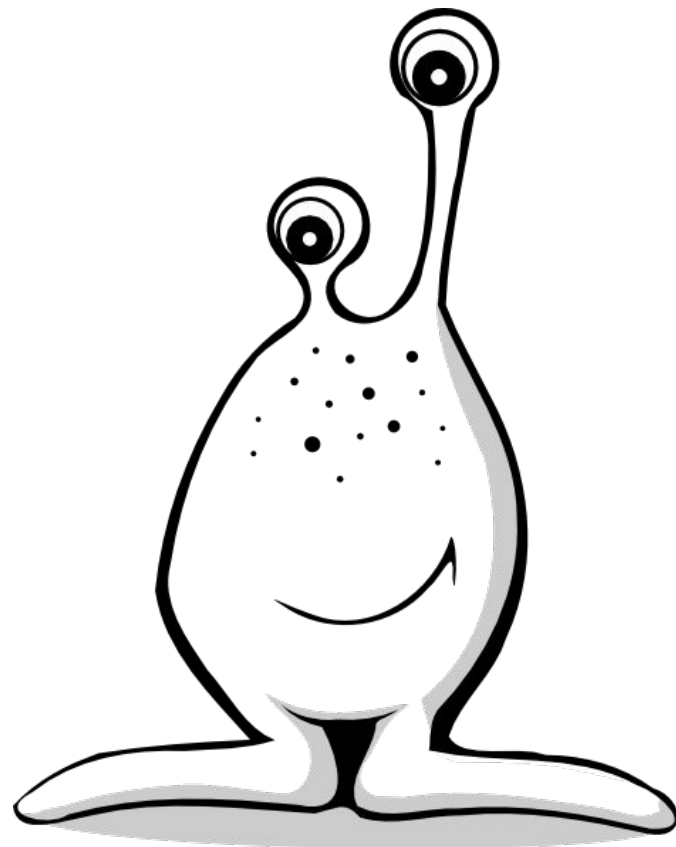
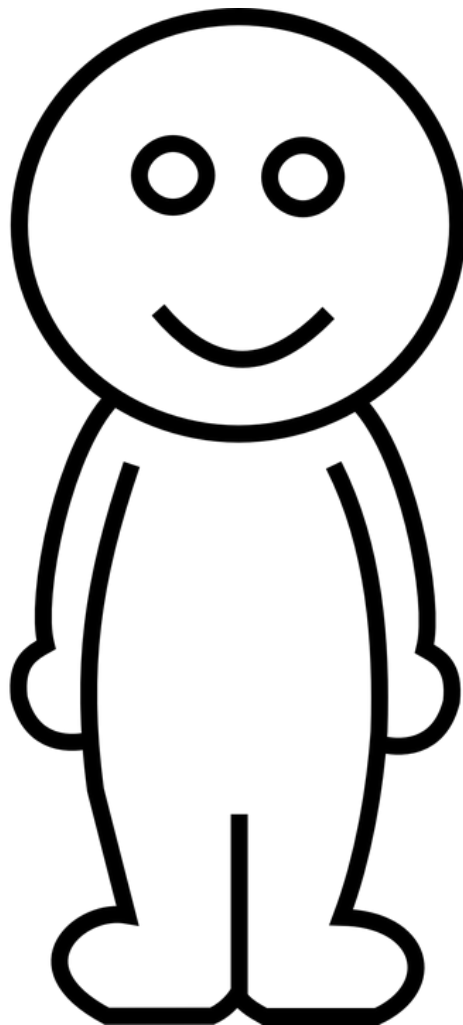
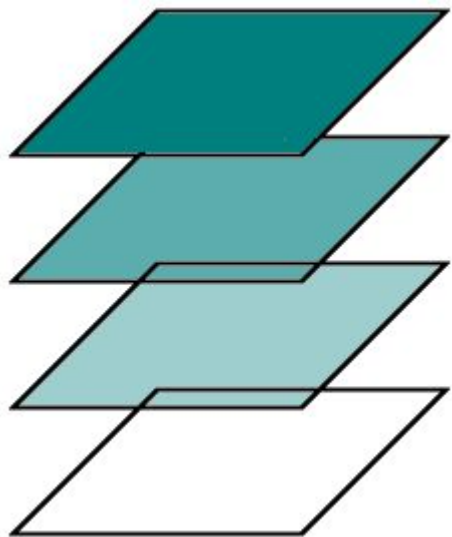
Physical attributes
Personality
Current Status
Occupation
Hobbies
Memories
Relationships
Opinions
Secrets
Character arc
Childhood



HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING



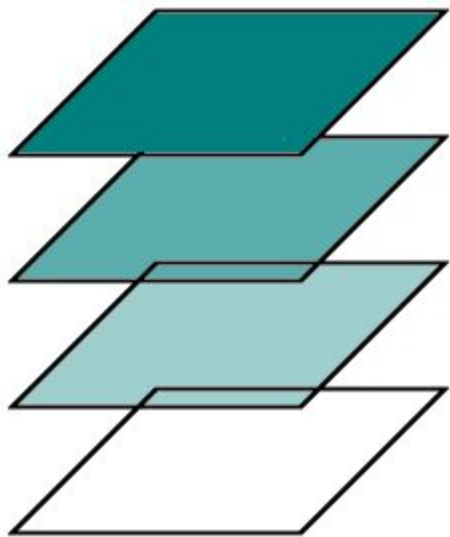
**HIGHER-ORDER
MEANING**



HIGHER-ORDER
MEANING



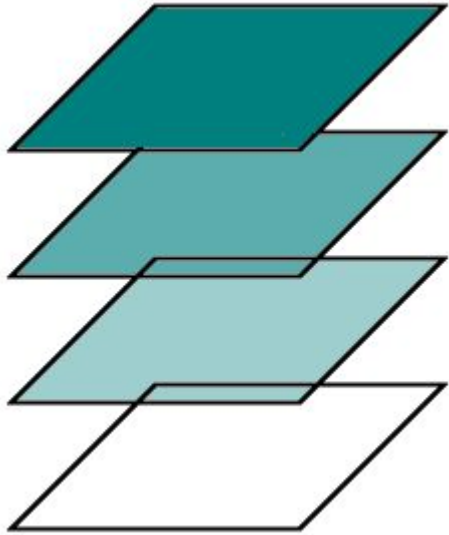
HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING

The Annals of the Parrigues

by Emily Short

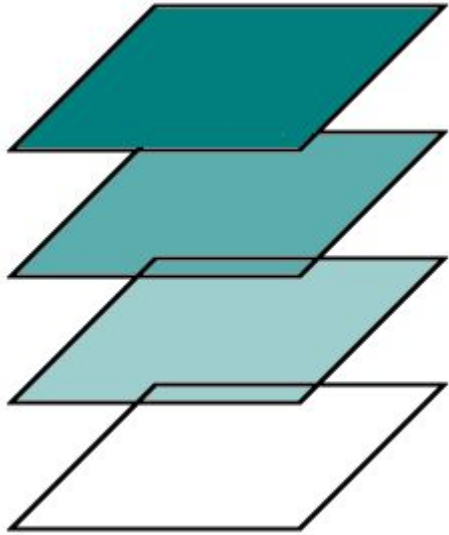


- Salt
- Beeswax
- Venom
- Mushroom
- Egg

HIGHER-ORDER
MEANING

The Annals of the Parrigues

by Emily Short



- Salt
- Beeswax
- Venom - colorful, deceitful, serpentine
- Mushroom
- Egg

HIGHER-ORDER
MEANING

Healing
Flexibility
Forgiveness



Ideas
Movement
Chance



Passion
Conflict
Destruction



Growth
Interdependence
Instinct



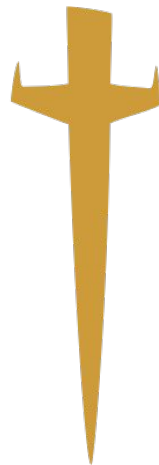
HIGHER-ORDER
MEANING



wealth
physicality
family



ambition
power
energy



conflict
intellect
reason



emotion
pleasure
instinct

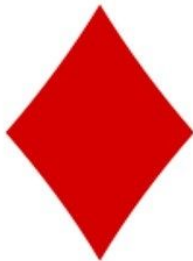
**HIGHER-ORDER
MEANING**

Power
Conflict
Death



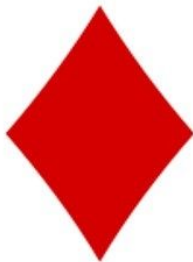
Emotion
Romance
Empathy

Wealth
Physicality
Resources

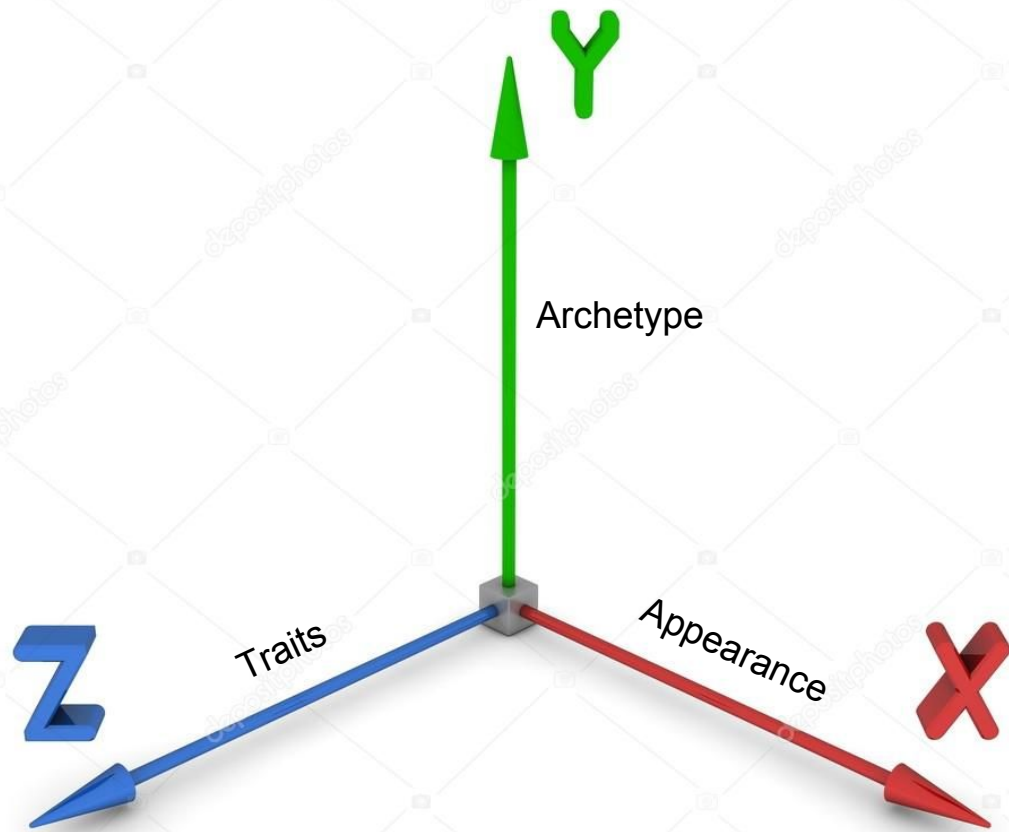


Intellect
Conversation
Plants?

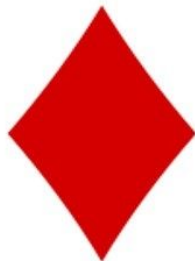
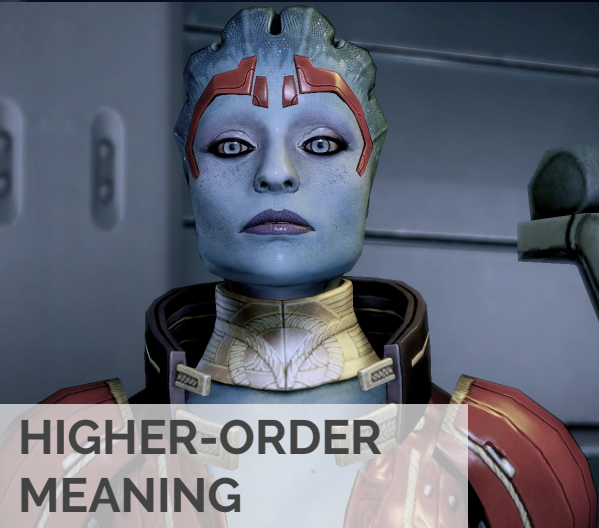
HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING



HIGHER-ORDER
MEANING



Argali the Ox

Ancient stories claim that Argali never stopped stargazing and eventually became a world-renowned astronomer, discovering more constellations than anyone since.

Then Argali spoke often of the importance of human comforts, delighting in good food and family.

Moon Hunters
(2016)





The background is a deep black space filled with a dense field of stars. Many stars exhibit prominent four-pointed diffraction spikes, giving them a sparkling appearance. Faint, wispy nebulae are scattered throughout the scene, adding texture and depth to the cosmic landscape.

Surface Meaning First

ESC unlock (F1)

Mehmet

Caves of Qud
(2015)

Years of the desert have taken their toll on his body, but he commands your ear with his voice like few other men, and you wonder what sovereignty he might've come to were he not born a moisture farmer.

Loved by the villagers of Joppa.

Disliked by urchins for ruining the festival of Ut yara Ux.

Disliked by unshelled reptiles for giving one of their kind an unfavorable horoscope reading.


Disliked by the villagers of Kyukukya for eating one of their young.

Equipped: woven tunic, steel vinereaper, sandals

Perfect

Impossible, Neutral

SURFACE
MEANING

$$A + B + C = \text{Tom}$$


SURFACE
MEANING



Idealist
2 children
Composer

Hungry
Strong
Male

Agile
Teacher
Lonely

Female
Grieving
Doctor

Angry
Deaf
Pregnant

Cruel
Married
Loves milk

Scientist
Gullible
Irritable

Drunk
Cultist
Texan

Vegan
Dancer
Logical

Lawful
Outgoing
Sterile

Autistic
Widow
Elder

Wealthy
Shy
3 cats

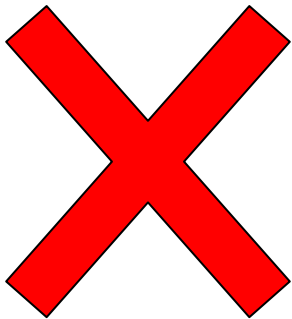
Hedonist
Wounded
Kind

Criminal
Violent
Ambitious

**SURFACE
MEANING**

Greetings...

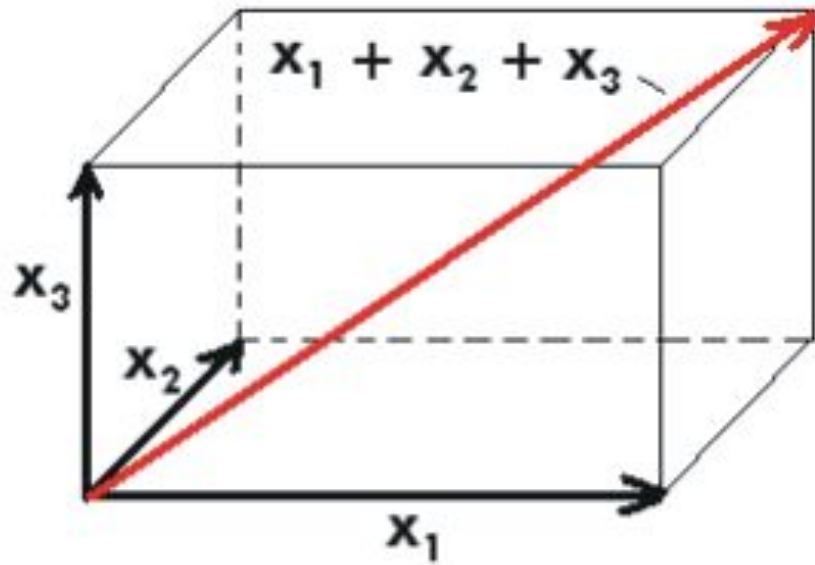
if	then
...low level	"Pitiful newbie!"
...set flag	"I remember you! You killed my father!"
...multiplayer	"Ah, you brought friends!"
...has object	"Nice sword!"



Greetings...

if	then
...low level	"Pitiful newbie!"
...set flag	"I remember you! You killed my father!"
...multiplayer	"Ah, you brought friends!"
...has object	"Nice sword!"

**BUILD
ORTHOGONALLY**



SURFACE
MEANING

Civilization VI
(2016)



**SURFACE
MEANING**

Egypt is lost. If I can't embrace my love, I will embrace the asps.

CLEOPATRA
EGYPTIAN EMPIRE

Declare Surprise War
Warmonger penalty: Moderate

Declare Formal War
Warmonger penalty: Light

Make Deal

Make Demand

INTEL REPORT

Gossip Items: No New Items

Access Level: None

Our Relationship: Denounced

Agendas: Queen of the Nile
1 Hidden agendas

Government: Oligarchy

Cleopatra's Relationships

GOSSIP

LAST TEN TURNS

Rumor has it that Egypt has progressed from the Classical Era to the Medieval Era.

OLDER

Rumor has it that Egypt has just declared war on Toronto!

Rumor has it that Egypt has progressed from the Ancient Era to the Classical Era.

Civilization VI
(2016)



SURFACE
MEANING

Middle-earth:
Shadow of War
(2017)

32 Zog the Eternal
Cursed Mystic Trickster

We meet again. I am Zog, and I've been watching you for some time. You're the inspiration for all this! What better army to defeat a dead Man than a legion of

SURFACE
MEANING

Massive Chalice (2015)

Sagewright Level 6 ♀ Died at 71

5704/6200 XP

Traits

- ◆ Longevity
Longer lifespan.
- ◆ Hearty
Increased Max HP.
- ◆ Slow Learner
Decreased XP gain.

Personality

- ◆ Flinger
Reduced evasion against
melee attacks.
- ◆ Feuding with Stormcrow
Decreased Accuracy from
fighting alongside family
enemies!
- ◆ Avenger
Increased damage after the
death of an ally.

Status

- ◆ Old Age
Increased Intuition and

CLEOPATRA EGYPTIAN EMPIRE

Declare Surprise War
Warmonger penalty: Moderate

Declare Formal War
Warmonger penalty: Light

Make Deal

Make Demand

INTEL REPORT

Gossip Items: No New Items

Access Level: None

Our Relationship: Denounced

Agendas: Queen of the Nile
1 Hidden agendas

Government: Oligarchy

Cleopatra's Relationships

GOSSIP

LAST TEN TURNS

Rumor has it that Egypt has progressed from the
Classical Era to the Medieval Era.

OLDER

Rumor has it that Egypt has just declared war on
Toronto!

Rumor has it that Egypt has progressed from the
Ancient Era to the Classical Era.

Darkest Dungeon (2016)

The redbookjohn Estate

Chester

Veteran Jester

3

000

Quirks

Evasive

On Guard

Photomania

Ruins Adventurer

Warrens Tactician

Nocturnal

Weald Phobe

Winded

Fear of Eldritch

Soft

Base Stats

MAX HP	29	ACC MOD	+0
DODGE	35	CRIT	9.0%
PROT	0%	DMG	6-11
SPD	7		

Equipment

4 4

1

SURFACE
MEANING

Kadol Kilrudroldeth has been happy lately. He admired a fine dining room recently. He slept without a proper room recently. He slept in a bedroom recently. He admired own fine Bed lately. He has complained of the Dwarf Fortress. He has been satisfied at work lately.

He is married to Atír Riddledlanterns and has 5 children: Edër Vorwhips, Aðshrir Mileaxe, Rovod Fencescribed and Rith Spearstockade. He is the son of Erib Goodshiteb Elderslashes. He is a casual worshipper of Tobul the Gold of Cobble, a casual worshipper of Alron the Granite Diamonds and an ardent worshipper of Eser.

He is a citizen of The Cooperative Sacks. He is a member of The Praised Canyons. He is a former member of The Alchemical Shields. He is a former member of The Mellow Coven. He is a former member of The Decisive Mines. He is a former member of The Communion of Petals. He is a member on the 8th of Malachite in the year 126.

He is sixty-four years old, born on the 5th of Hematite in the year 62.

He is tall. His eyes are jade. His extraordinarily broad tall ears have great lobes. His sideburns are clean-shaven. His long moustache is neatly combed. His long hair is arranged in double braids. His very long hair is neatly combed. His skin is ecru.

He is incredibly tough, but he is very quick to tire.

Kadol Kilrudroldeth likes gypsum plaster, pig iron, schorl, the color ash gray, earrings and animal traps. When possible, he prefers to consume kakapo, yak cheese and beer. He absolutely detests purring maggots.

He has a great feel for social relationships, a great memory, a sharp intellect, a good vocabulary and an ability to read emotions fairly well, but he has a shortage of patience, poor intuition and poor spatial senses.

He occasionally overindulges. He is never optimistic or enthusiastic about anything isn't given to flights of fancy. He likes to try new things. He is willing to compromise for others. He is modest. His voice trails off when he is thinking about something. He needs to get through the working day.

A short, sturdy creature fond of drink and industry.

Dwarf Fortress
(2006)

SURFACE
MEANING



**SURFACE
MEANING**

Name:
Choi Young-jae



SURFACE
MEANING

Name:
Choi Young-jae

Security guard
Strict discipline
Shy



Name:
Choi Young-jae

Security guard
Strict discipline
Shy

Relationships

Childhood: ???
Secrets: ???

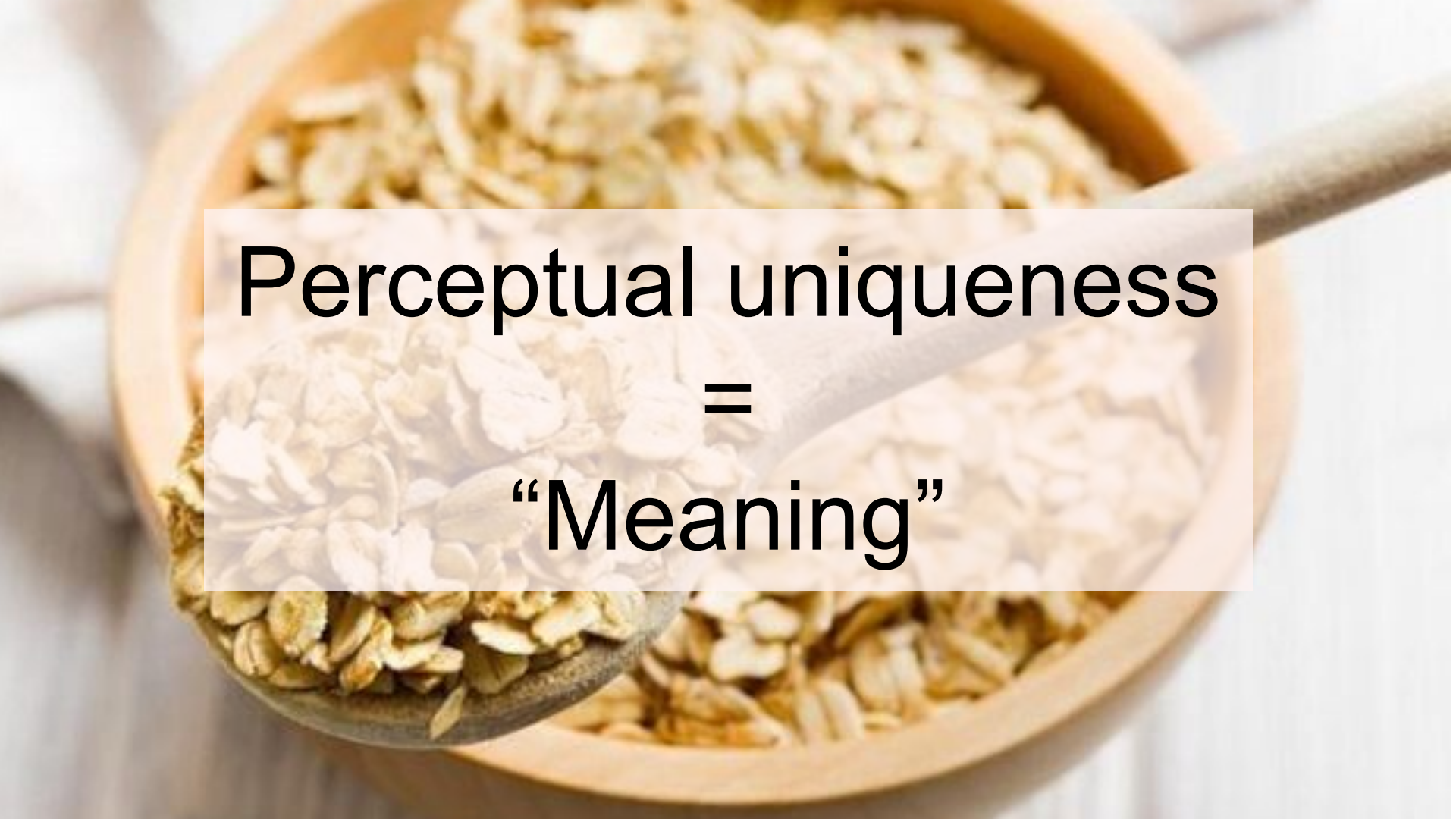


SURFACE
MEANING

Name:
Choi Young-jae



SURFACE
MEANING

A close-up, high-angle photograph of a light-colored wooden bowl filled with rolled oats. A wooden spoon is partially submerged in the oats, with its handle extending towards the top right. The background is a soft, out-of-focus white surface. Overlaid on the center of the image is a semi-transparent white rectangular box containing the text "Perceptual uniqueness = 'Meaning'".

Perceptual uniqueness
=
“Meaning”



**SURFACE
MEANING**

$A + B + C = \text{Tom}$

$D + E + F = \text{Taika}$

$A + D + C = \text{Zoe}$

$B + E + F = \text{Hild}$

A + B + C = Tom

D + **E** + F = Taika

A + **D** + F = Zoe

B + **E** + C = Hild

Bad News
(2017)



**SURFACE
MEANING**



**SURFACE
MEANING**

NEW: Social Media sensation (Fame +100)

Changes & notifications
(if any)

1 second:
Changes since last
viewing/meeting

**SURFACE
MEANING**



Bodyguard

Changes &
notifications

Rarest Attribute &/or
Visual Signifier

2 seconds:
The #1 difference b/t this
character and others.
(Ideally a constant, usable
by player for future
reference)

**SURFACE
MEANING**





Choi Young-jae

Patrolling Suspicious Single

Changes &
notifications

Rarest
Attribute

Current Status

10-30 seconds:
Mood, activity, situation,
problem.

**SURFACE
MEANING**

“...but then I
took an arrow
to the knee.”

Changes &
notifications

Rarest
Attribute

Current
Status

Opt-in
Detail

30 seconds+:
Common attributes,
habits, relations,
knowledge, memories,
opinions, etc.

**SURFACE
MEANING**





Changes & notifications
(if any)

Rarest Attribute
&/or
Visual Signifier

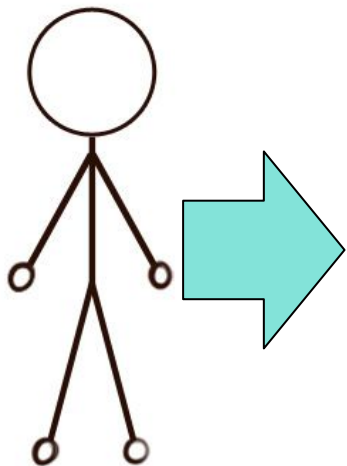
Current Status

Opt-in Detail

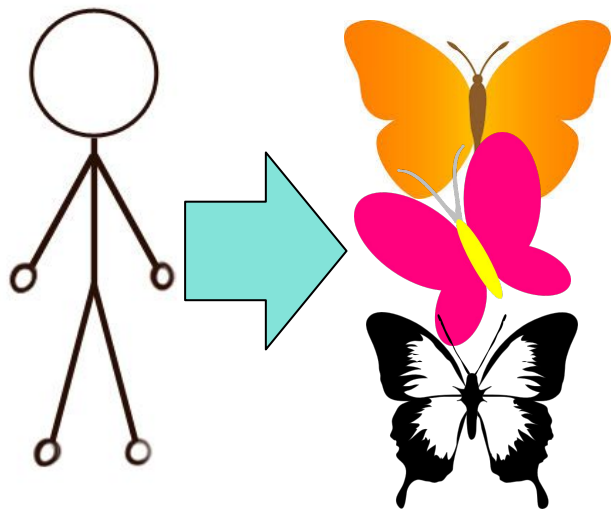
**SURFACE
MEANING**



Iterate With Co-author(s)



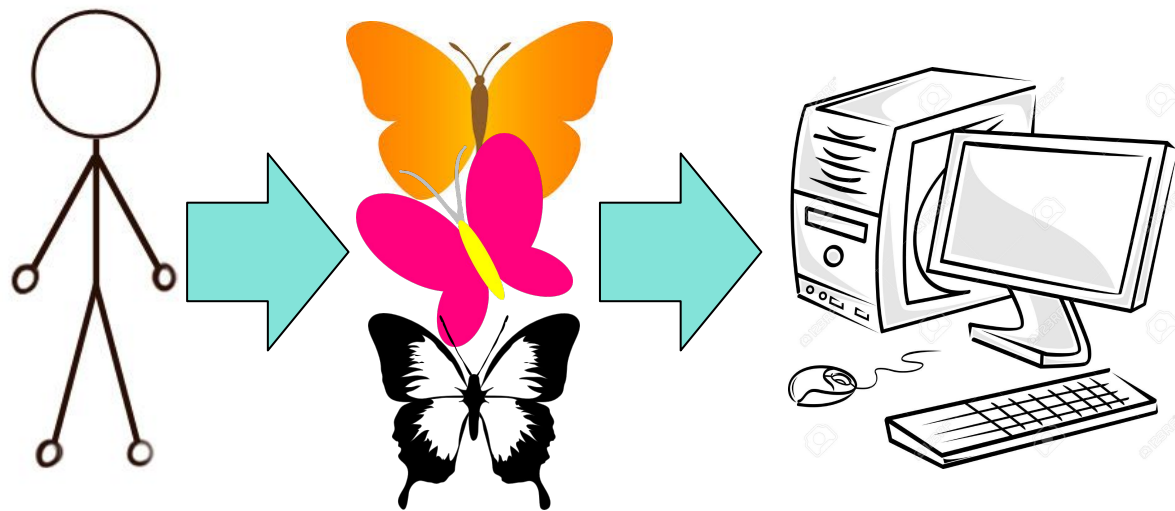
ITERATE WITH
CO-AUTHOR(S)



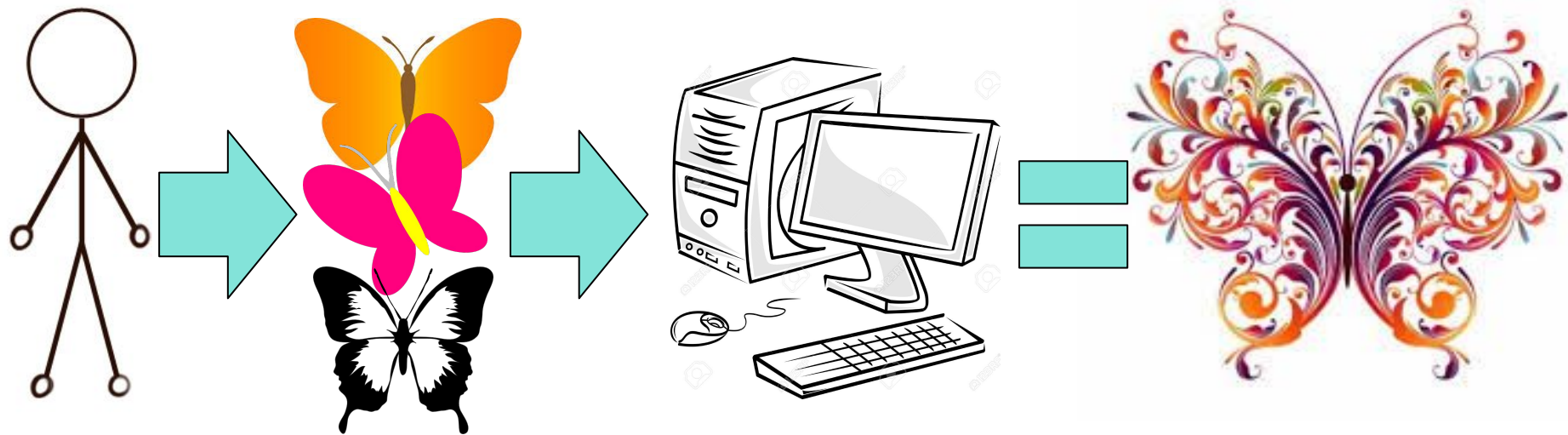
ITERATE WITH
CO-AUTHOR(S)

Butterflies of the world

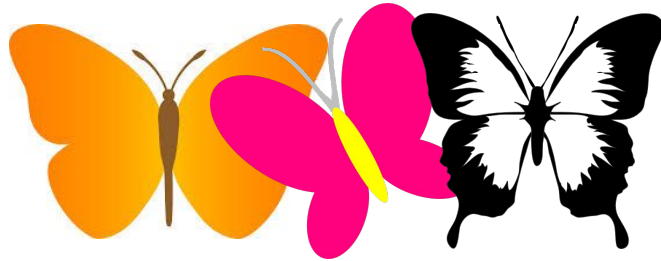
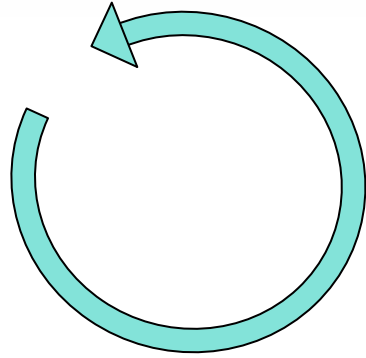




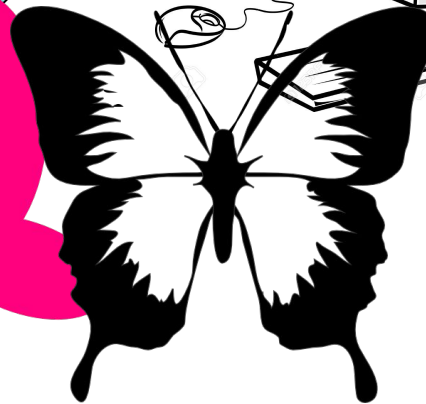
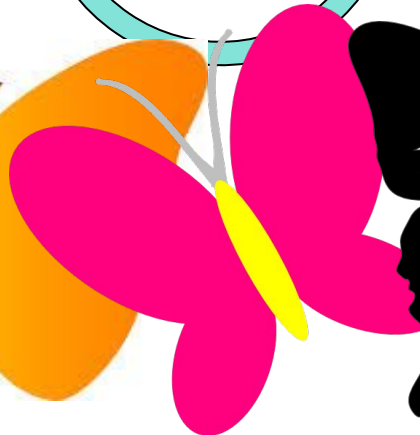
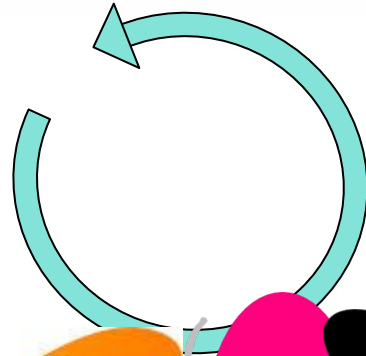
ITERATE WITH
CO-AUTHOR(S)



ITERATE WITH
CO-AUTHOR(S)



SYSTEM COMPLETE
!=
ALPHA



EXAMINE
CO-AUTHOR(S)

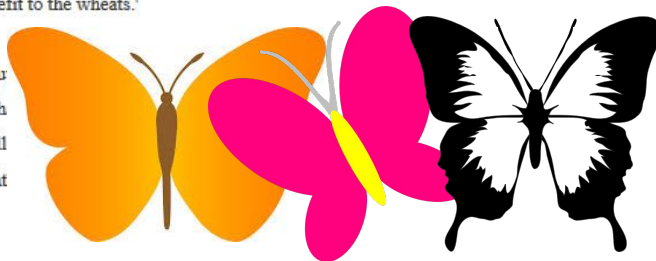
The Garrulous

Gar|RU|li|ty is an **effusion** of **prolix** and **unpremeditated** speech. The garrulous man happening to sit beside one with whom he has no **acquaintance**, begins by naming the various virtues of his wife: then he says that last night he dreamed a dream, which he narrates at length; this leads him to mention, one by one, the dishes that were placed within his reach at supper. By this time his tongue has gained speed in going; and he proceeds in a loftier strain: 'Alas!' saith he, 'how much more sinful are the men of our times than were their ancestors! and what a price has wheat fallen to now in the markets! and how the city swarms with foreigners! By the time the Bacchanalia are well over the sea will be covered again with ships; should it please Heaven, just now, to send rain, it would be a vast benefit to the wheats.'



Next, he announces his plan to farm his own land the coming year. 'But times to get a living! I must tell you, being, as I perceive, a stranger, th displayed the largest torch in the late festival. By the way, can you tell

day I was sick—ahem! What day of the mont

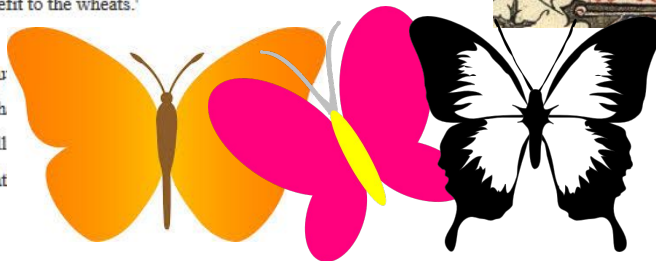


EXAMINE
CO-AUTHOR(S)

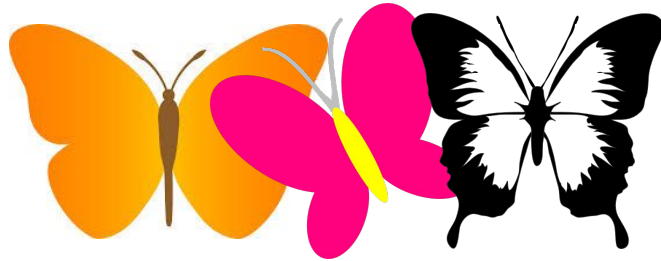
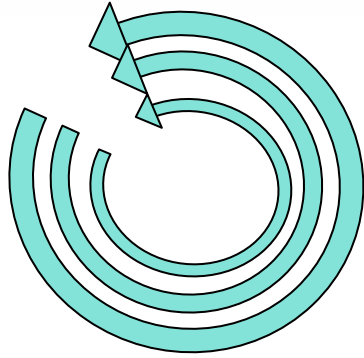
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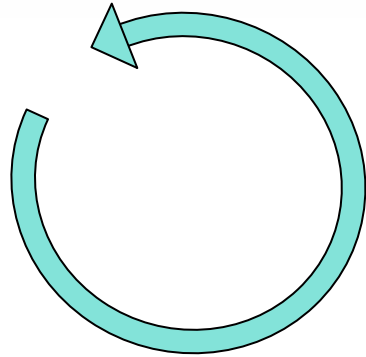
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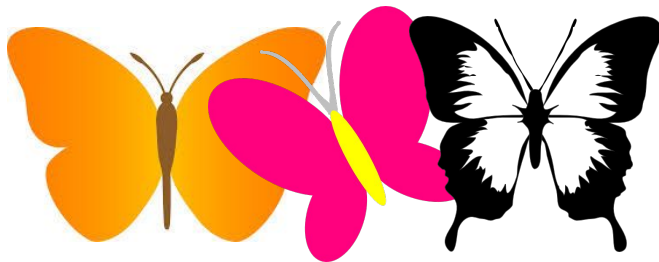
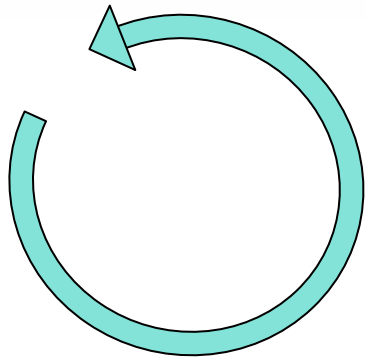
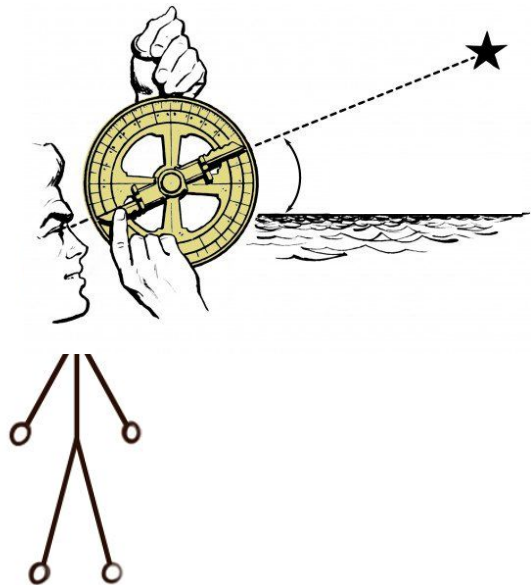
EXAMINE
CO-AUTHOR(S)



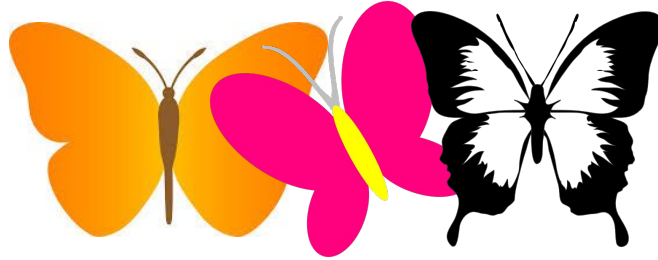
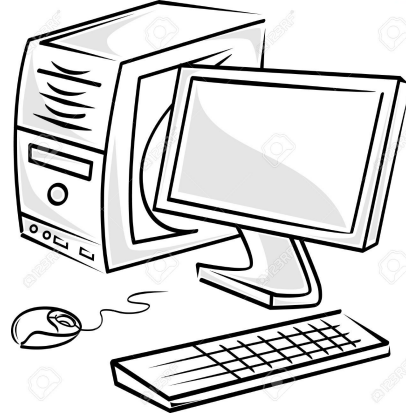
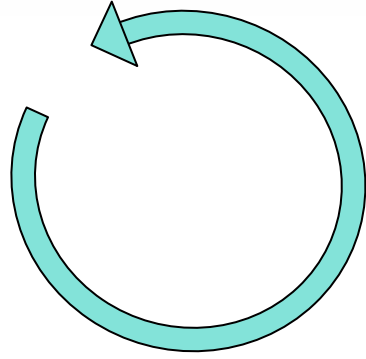
TEST OFTEN



MEASURE RESULTS



MEASURE RESULTS



PLAN EXCEPTIONS

1. Build orthogonally
2. Create higher-order meaning
3. Surface meaning
4. Iterate with co-author(s)
 - a. System complete \neq alpha
 - b. Examine co-author(s)
 - c. Test often
 - d. Measure outputs
 - e. Plan exceptions





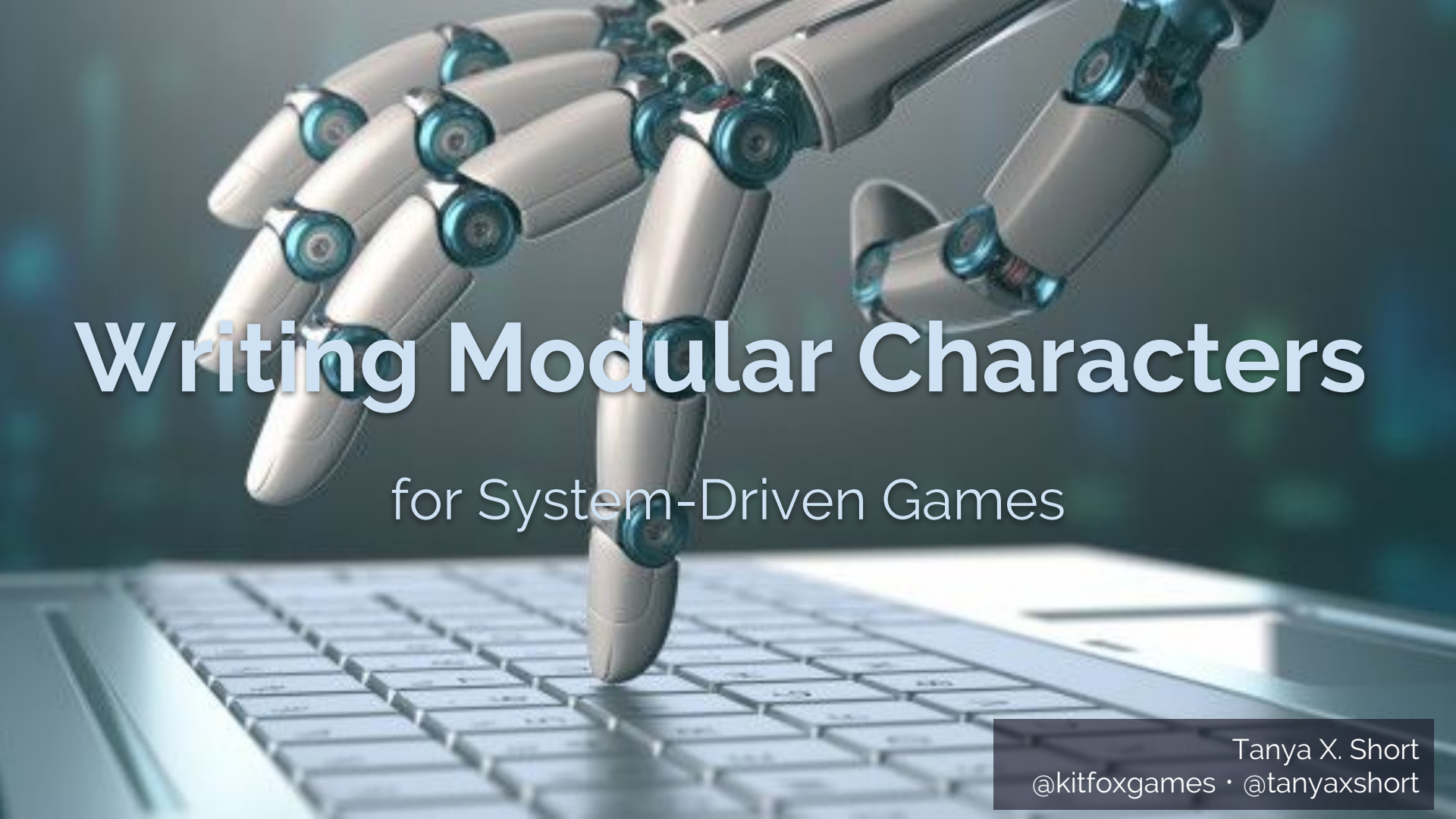




SERPENTARIUS.

SERPENS





Writing Modular Characters

for System-Driven Games

Tanya X. Short
@kitfoxgames • @tanyaxshort