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UNDERSTANDING GAMING COMMUNITIES AND EXPLORING LEARNING OPPORTUNITIES: A COMPUTATIONAL GROUNDED THEORY APPROACH

Hello everyone, and welcome to our presentation on understanding gaming communities and exploring learning opportunities. We are excited to speak to you about what we've discovered about games and learning from an analysis of data from a gaming community; that said, one of our key goals in this presentation is also to give you an overview of the methods that we used, which we're referring to as a “computational grounded theory approach.”

My name is Spencer Greenhalgh—I am an assistant professor in the University of Kentucky's School of Information Science. I'm joined here by Kun Huang, from UK's Instructional Systems Design program, and our colleague Josh Rosenberg from the Department of Theory and Practice in Teacher Education at the University of Tennessee—Knoxville was not able to come to Las Vegas to join us.



It shouldn't be any surprise at this point that the field of educational technology is interested in whether and how games and simulations support learning. The literature that I know of goes back at least to the 1960s and 1970s, the latest editions of major ed tech handbooks all contain chapters on games, and we are far from the only games-related presentation here at AECT 2019. For much of this history, those studying and using games for learning purposes have had to fight hard to justify the idea that a game can be a learning tool—especially if it's a game designed for entertainment rather than learning.

One of the big names in the games and learning literature, though, is James Paul Gee, and beginning about 15 years ago, he started to turn that argument on its head.

**“LIKE READING AND THINKING,
LEARNING IS NOT GENERAL,
BUT SPECIFIC”**

Gee (2003), p. 7

Gee comes from a sociolinguistics background and has strong sociocultural views on learning. For example, he argues here that learning is not general—it's specific. We might have a very specific picture of what “learning” looks like, and that picture is likely tied to traditional educational practices or to things that we can measure using standardized instruments. For Gee, though, learning is a very broad, very diverse phenomenon. For example, if we were all to leave the convention center right now and go onto the casino floor, some of our colleagues would likely turn up their nose at us. We're here for professional learning, they might say, and playing the slots is not professional learning. Well, it might not be professional learning, but Gee might argue that sure, it's some kind of learning. I have only the barest idea of how a slot machine works, what gambling etiquette is like, and how to not look terribly out of place on a casino floor. If I spent enough time out there, though, and if I interacted with enough people, I'd eventually pick up the practices, mannerisms, and knowledge that I would need to pass myself off as someone who really belongs in Las Vegas. That specific learning isn't going to look at all like what most of us think of when we think of “learning,” but it's still a kind of learning.

“IF WE ARE CONCERNED WITH WHETHER SOMETHING IS WORTH LEARNING OR NOT, WHETHER IT IS A WASTE OF TIME OR NOT—VIDEO GAMES OR ANYTHING ELSE—WE SHOULD START WITH QUESTIONS LIKE THE FOLLOWING: WHAT ... DOMAIN IS BEING ENTERED THROUGH THIS LEARNING? IS IT A VALUABLE DOMAIN OR NOT? IN WHAT SENSE?”

Gee (2003), p. 23

Gee's argument essentially opens the door for a lot of things to be “learning,” and so he challenges us to stop asking “are players learning from games” and to start asking “what are people learning through games? is it useful? is it valuable?”

Taking this sociocultural, literacies-driven view of learning is really helpful for those of us studying games because it lets us move past the question of whether games are really and truly learning artifacts and concentrate instead on asking what is being learned and whether it's worth learning. As a side note, this broad view of learning is also helpful for keeping our minds open to kinds of learning and kinds of knowledge that aren't always privileged in our society.

However, Gee's flipping of the problem on its head isn't a silver bullet—there are still important questions to wrestle through, and it turns out that asking “what are people learning from games?” can be a complicated question.

ECO

NEWSFORUMWIKIACCOUNTBUY ECO

44 Looks amazing, I've never seen a game concept so beautifully designed around systems thinking and evidence-backed decision-making. 77

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BUILD A CIVILIZATION IN A SIMULATED ECOSYSTEM

Eco is an online game where players must collaborate to build a civilization in a world where everything they do affects the environment. All resources come from a simulated ecosystem, with thousands of plants and animals simulating 24/7. Work together through the player-run government and economy to build the technology to stop a meteor on a collision course with the planet, without polluting the world and killing it off in the process before that even happens.

Current Status: Alpha is released and open for players.



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Successful Kickstarter



Climate Challenge Award



PAM Prime Award

ECO NEWS



STRANGE LOOP GAMES BECOMES FOUNDING MEMBER OF THE PLAYING FOR THE PLANET ALLIANCE

Eco aims to address climate change through the medium of video games. We were honored to announce at the United Nations Climate Summit this week that with Eco and our future titles, we're joining forces with other game companies to be founding members of the 'Playing for the Planet Alliance'.

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ECO

For example, let's take a look at Eco. Eco is a game that takes a lot of cues from popular entertainment games, such as Minecraft, in that players spend time harvesting resources, crafting items, and building structures. However, its designers have educational goals in mind—you can even see that the company creating Eco has received Department of Education funding to support their work. The brief premise of the game is that players have a set amount of in-game time to detect and destroy an asteroid before it collides with their planet; during that time, they must build up a technological infrastructure that will allow them to produce an asteroid-destroying laser. However, if they aren't careful, they'll destroy the ecology of their in-game world, replacing one apocalyptic scenario with another.

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GAMES FOR CHANGE

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So, as we’re looking at Eco as a potential learning tool, and as we’re asking Gee’s question of “what will players learn from this game?”, we might naturally zoom in on this promise of a simulated ecosystem and conclude that...



... Eco could be a site for learning about science. This is hardly unprecedented—Sasha Barab and colleagues worked with a game called Quest Atlantis in the mid-to-late 2000s, and there are plenty of other science games out there.

Here’s the thing, though: I’ve never been a science teacher—I’m team social studies and humanities all the way. Does that mean that Eco doesn’t have anything to offer me?

eco

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AS A SITE FOR LEARNING ABOUT...

Well, Eco's got some other features, too. Players have to build a civilization, complete with establishing an economy and a political system, which is music to my ears. So, maybe I could use Eco



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“Looks amazing. I've never seen a game concept so beautifully designed around systems thinking and evidence-backed decision-making.”

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ECO
AS A SITE FOR
LEARNING
ABOUT...

DEVELOPMENT?

(SQUIRE; 2006; OWENS, 2011)

...as a site for learning about the development of a civilization over time. Again, this has some precedent. Kurt Squire and Trevor Owens have both looked at the game Civilization as a site for studying questions of how societies and nations grow and develop.

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AS A SITE FOR LEARNING ABOUT...

Let’s be honest, though. Eco’s a pretty fun game all by itself, and there’s no getting around the fact that even the most advanced simulation of ecosystems and civilizations is still just that—a simulation.



ECO AS A SITE FOR LEARNING ABOUT...

ECO?

(HARTMANN & VORDERER, 2010)

Is there a danger that all players are learning when they play Eco is... well... how to play Eco?

For example, Hartmann and Vorderer have done some work exploring players' moral disengagement in violent video games. The crux of their argument is that sometimes, players shelve the moral ramifications of their in-game actions so that those don't get in the way of fun or competition. Now, I'm not here to say that people shouldn't play violent video games, but I think that does have interesting implications for a game like Eco, where we're hoping that players consider the moral ramifications of their laws, their moral obligations to the ecosystem, and whatever ethical implications might result from an asteroid hurtling toward your planet, poised to wipe out all life. We might reasonably ask the question whether our students are playing to learn or just playing to win—however they define winning.

So, Gee provided us with a sort of reassurance that of course players are learning when they play games, but he also opened a Pandora's box for us. What are players learning, and is it valuable? Each of the cases that we've just outlined is plausible for Eco, and if we don't know what players are up to, it's hard for us to say much about the learning that's going on in this site.

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ECO AS A SITE FOR LEARNING ABOUT...

Now, there's one more possibility that I haven't quite brought up yet. Eco involves collaboration and cooperation between players, so even if they're sticking their fingers in their ears and refusing to learn anything about science or social studies, being successful in the game necessarily requires that they pick up some...



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ECO

AS A SITE FOR
LEARNING
ABOUT...

SOCIAL
PRACTICES?

(STEINKUEHLER & DUNCAN, 2008)

...social practices along the way. Over a decade ago now, Constance Steinkuehler and Sean Duncan published a study called “Scientific Habits of Mind in Virtual Worlds.” They essentially asked themselves what kinds of learning were happening in the popular online game World of Warcraft. Rather than look at the game itself, they actually...



ECO AS A SITE FOR LEARNING ABOUT...

SOCIAL PRACTICES?

(STEINKUEHLER & DUNCAN, 2008)

...explored some of the online forums related to the game and began to look at the social practices that were being carried out there. More specifically, they found that player discussions in the forums reflected scientific practices, including systems-based reasoning, social knowledge construction, and evaluative epistemologies.

Now, many games have large gaming communities surrounding them, based in a forum or a messaging app, or social media platform, and these communities are often the actual sites where learning is taking place (in addition to or instead of the game world itself). However, Steinkuehler and Duncan also showed that these communities can pose some challenges for research.

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“THE OFFICIAL WEBSITE
ALONE FEATURES 31
SEPARATE FORUMS
TOTALING WELL OVER
270,000 SEPARATE, ACTIVE
THREADS”

Steinkuehler & Duncan
(2008), p. 532

In short, there’s a lot of data. [read quote]. That’s just way too much to read.

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“WE CHOSE TO LIMIT OUR DATA CORPUS WE PULLED A RANDOM SAMPLE OF 1,984 POSTS ACROSS 85 THREADS”

Steinkuehler & Duncan (2008), p. 532

So, what Steinkuehler and Duncan did was to limit their data corpus, pulling a limited number of posts and threads to analyze. This study is wonderful, and we don't cast any doubt on their findings, but one can't help but wonder... what else could we have learned from the rest of the data?

COMPUTATIONAL GROUNDED THEORY

This is where computational grounded theory comes in. This term was proposed by Laura Nelson, a sociologist at Northeastern University, and refers to...

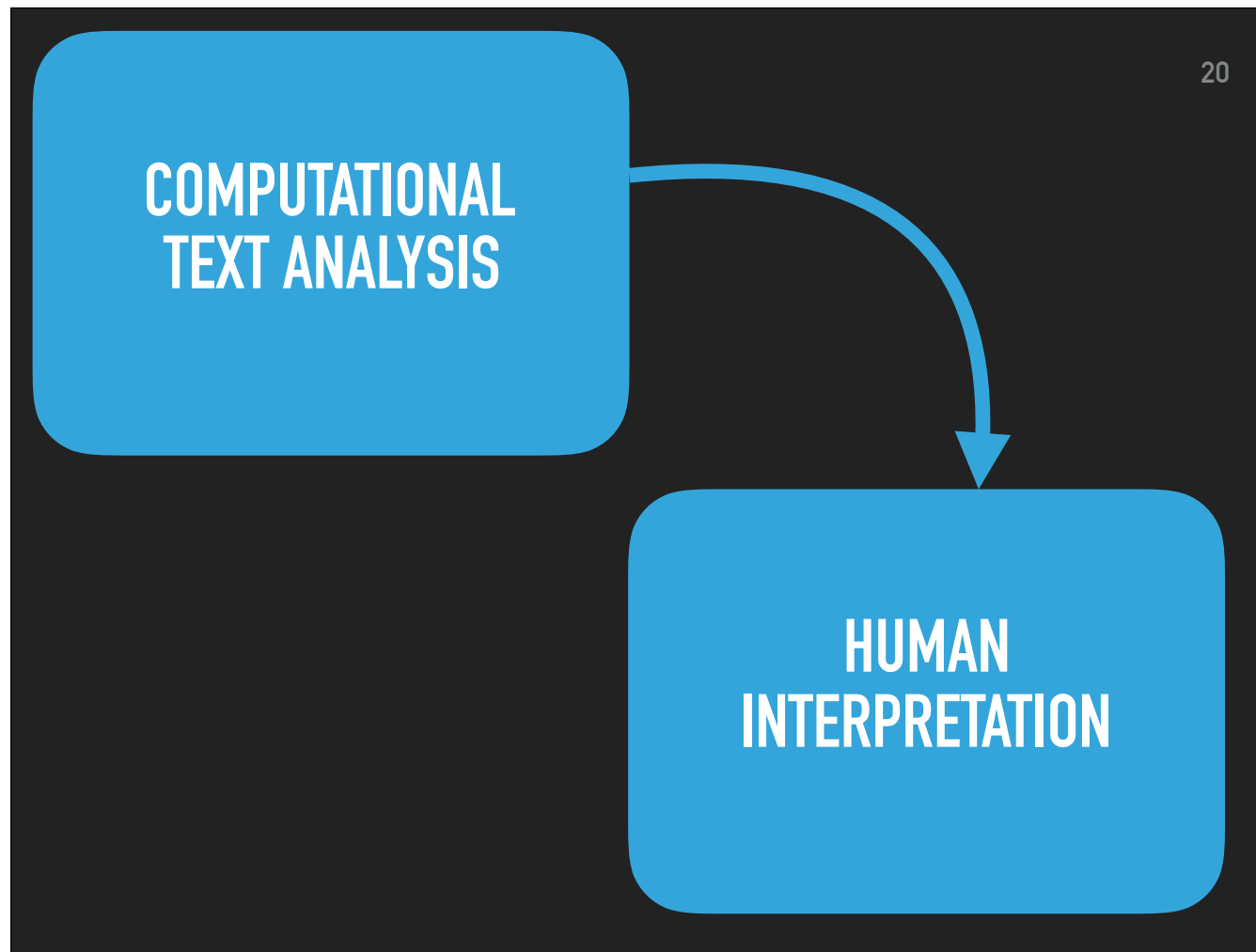
“...COMBINES EXPERT HUMAN KNOWLEDGE AND HERMENEUTIC SKILLS WITH THE PROCESSING POWER AND PATTERN RECOGNITION OF COMPUTERS, PRODUCING A MORE METHODOLOGICALLY RIGOROUS BUT INTERPRETIVE APPROACH TO CONTENT ANALYSIS”

Nelson (2017)

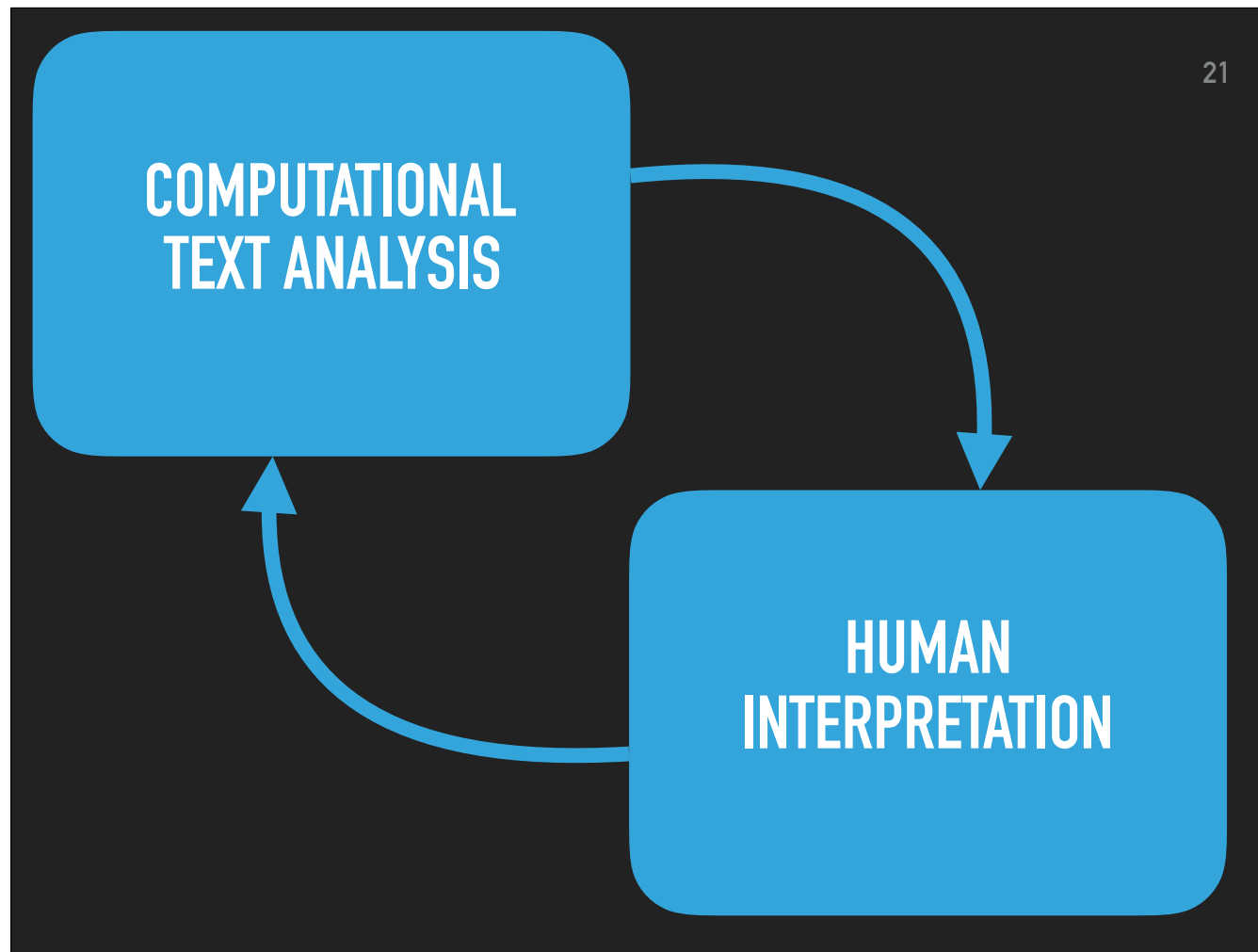
an approach that... [read slide]. So, what does this look like in practice?

COMPUTATIONAL TEXT ANALYSIS

We begin with computational text analysis. Computational approaches to text analysis lack the nuance and insight of human researchers, but they're very good at quickly analyzing large amounts of text data, and they can sometimes even pick up on patterns that humans would have missed.



However, that computational step serves only to set up a second phase, where human researchers use their insight, nuance, and humanity to examine, interpret, and refine the computational analysis.



Now, just as the human interpretation can be used to add nuance and insight to the computational findings, a second round of computational analysis can be used to add reliability and confirmation to the human interpretation. We are quick to note that we will not be reviewing this final step in today's presentation because the study we're reporting on is still in a relatively early stage. However, the first two steps on their own remain tremendously useful to researchers, as we hope you will see.

So, given all of this background, what exactly are we here to talk to you about?

EXAMINE THE POTENTIAL²² OF CGT FOR EXPLORING GAMING COMMUNITIES AND IMPLICATIONS FOR LEARNING

The purpose of this study is to examine the potential of computational grounded theory for exploring gaming communities and implications for learning. As we've seen, exploring gaming communities is a valuable way to see what players are doing, which can help us see what they may be learning through the game, which can help us as educational technology researchers better understand games' implications for learning. However, we've also seen that these gaming communities often provide just too much data for us to consider all of it. Computational Grounded Theory may provide an answer for us, and so our goal today is to put that to the test. We'll do so by asking the following three questions:

1. WHAT KINDS OF DISCUSSIONS DO ECO PLAYERS ENGAGE IN?

2. HOW IS LEARNING²⁴ EVIDENCED IN THESE DISCUSSIONS, IF AT ALL?

3. WHAT ARE THE AFFORDANCES OF CGT?

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DATA COLLECTION

DATA COLLECTION

- ▶ focused on five (of nine) Eco forums

DATA COLLECTION

- ▶ focused on five (of nine) Eco forums
- ▶ “scraped” all 10,898 posts from forums

used R—more specifically, the “rvest” package, which is part of what’s called the “tidyverse”

DATA ANALYSIS

DATA ANALYSIS

► computational analysis:

DATA ANALYSIS

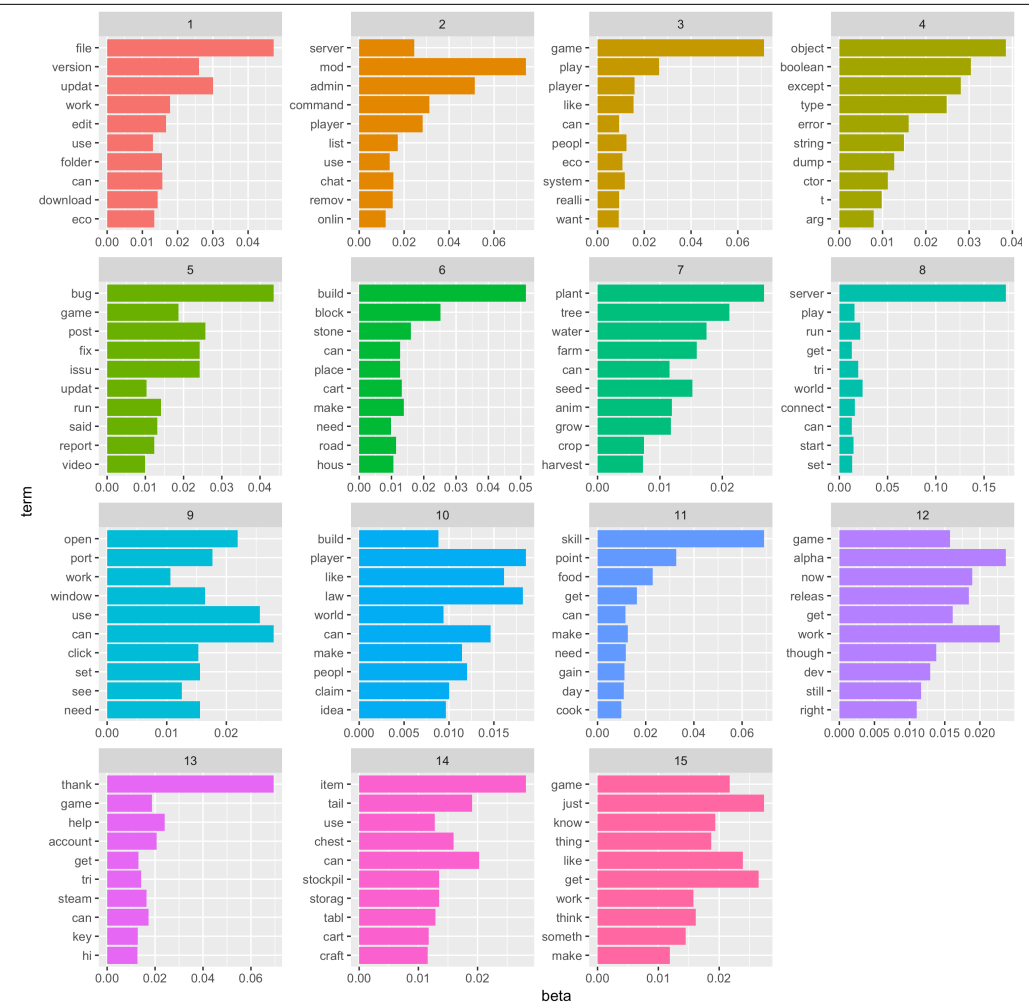
- ▶ computational analysis:
 - ▶ use *topic modeling* to identify 15 “topics”: “recurring pattern[s] of co-occurring words” (Brett, 2012)

Megan R. Brett, Topic Modeling: A Basic Introduction

<http://journalofdigitalhumanities.org/2-1/topic-modeling-a-basic-introduction-by-megan-r-brett/>

We used the following R packages: `library(quanteda)`, `library(topicmodels)`, `library(lдатuning)`

We settled on fifteen topics through a combination of measures of fit and sort of eyeballing the redundancy of the topics.



Josh, what does the beta represent???

DATA ANALYSIS

- ▶ computational analysis:
 - ▶ use *topic modeling* to identify 15 “topics”: “recurring pattern[s] of co-occurring words” (Brett, 2012)
- ▶ human analysis

DATA ANALYSIS

- ▶ computational analysis:
 - ▶ use *topic modeling* to identify 15 “topics”: “recurring pattern[s] of co-occurring words” (Brett, 2012)
- ▶ human analysis
 - ▶ examine ten most-common words

DATA ANALYSIS

- ▶ computational analysis:
 - ▶ use *topic modeling* to identify 15 “topics”: “recurring pattern[s] of co-occurring words” (Brett, 2012)
- ▶ human analysis
 - ▶ examine ten most-common words
 - ▶ examine five most-representative posts

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mechanics of plants; how do they spread?; how do they work within the game world?

	A	B	C	D	E	F	G	H	J
1	forum	thread	threadLink	views	threadPosts	postNumber	screenname	post	topic
2	community-help	Farming ECO Forum	https://ecoforum	3006	13	10	craig.jong	Plants in general are needed for the species to spread - it doesn't matter if they're planted or natural. If the land would naturally support corn and you plant a corn plant nearby, it should spread eventually although this may take a while.	1
3	general	Fertilizer is silly..... ECO Forum	https://ecoforum	1151	1	1	MagicBackPack	So apparently fertilizer doesn't just fertilize a specific plot but an area. the exact size of this area is a mystery to me as of yet.....I now have 330 base nitrogen in one part of my farm with a minimum of 66 in others.....could we get a grid overlay of fertilizer aoe (like when we claim plots of land) it's very much needed.....	1
4	general	Land can support ECO Forum	https://ecoforum	663	1	1	N0iz	TL;DR: "Land can support: x" for plant A means "Current 4x4 cell can continuously support x A without fertilizers or water added" Hey, I think I know what the "Land can support" number means and since a quick search showed no info on that on the forum and wiki there goes this post.. From basic experiments with corn seeds, a soil sampler and and a bit of land I gathered that: -> There is a "soil state" grid with 4x4 cells (so not aligned to the claim grid). -> Farming variables (nutrients, temperature, rain, etc) are uniform across those 4x4 cells I think that: -> The "Land can support" value for a particular plant is the number of plant you can farm renewably on this 4x4 cell without depleting the nutrients and hence use fertilizers. So a "land can support" of 16 (4x4) or more is a perfect value. (I hope this is not viewed as spoilers and that I'm not misinforming)	1
5	ideas-feedback	Compiled Idea List from Discord Chat ECO Forum	https://ecoforum	4689	20	19	Grav	@Foolish_Crok something of that sort would be good for that maybe more like laying surveyor sticks to mark the area to build inside of could even go with the job part of paying someone to build in a location for you	1
6	ideas-feedback	Notes ECO Forum	https://ecoforum	418	1	1	Crua9	It would be cool to make notes. Like we can make a book that we can make notes. Since we have bookshelves, we can use them to hold them.	1
7	community-help	ServerName and another config documentation? ECO Forum	https://ecoforum	672	2	1	TheCherry	Hallo, can some one help me please? I want to change the name from our EcoServer. I run the Server with --no-gui on a Linux machine, I can't find any config to change the name, its take always the hostname. And is there any Documentation for all that Configs? What means as example the variable Rate: 10 in Network.eso ?	2
8								For your client: Delete contents of the ECO folder Unzip the latest download into your Eco folder. You are upgraded To Upgrade Server and keep same world stop your server Delete all files from your server except Game.eco in the stoarge folder and the Diasier.eco, Network.eco and Users.eco in your Config folder from you EcoServer folder	

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DATA ANALYSIS

- ▶ computational analysis:
 - ▶ use *topic modeling* to identify 15 “topics”: “recurring pattern[s] of co-occurring words” (Brett, 2012)
- ▶ human analysis
 - ▶ examine ten most-common words
 - ▶ examine five most-representative posts
 - ▶ organize topics into themes

1. WHAT KINDS OF DISCUSSIONS DO ECO PLAYERS ENGAGE IN?

GAME AS A COMMODITY

“I ONLY ASSUME THAT IT WILL NOT BE AVAILABLE IN THE STEAM SALE, SINCE IT JUST REACHED ALPHA 5 A FEW DAYS AGO, AND I ALSO ASSUME THAT THEY WILL PUT IT ON STEAM WITHIN THE NEXT VERSION THAT WILL BE LIKE START OF BETA PHASE. BUT ALL IN ALL THE GAME IS TOTALLY WORTH IT'S MONEY AND MUCH MORE PORGESSED THAN ANY FULL RELEASED TITLE FOR 50 BUCKS AND MORE”

GAME AS A COMMODITY

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

this incorporates six of the topics that were generated from our topic modeling: the first three are related to server-side issues

THE GAME.ECO FILE IS A ZIP FILE, YOU CAN RENAME IT AND OPEN IT WITH ANY ZIP EDITOR. INSIDE YOU'LL FIND FOLDERS FOR ALL THE RELEVANT GAME DATA, THE WORLD, USERS, ETC. PERFORM SURGERY AT YOUR OWN RISK, BUT MOST OPERATIONS SHOULD WORK (DELETING SOME USERS, DELETING THE WORLD SO IT REGENERATES, ETC)

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

configuring and updating servers (thread is about wanting to avoid losing game state)

43
I SET UP A SERVER TODAY (WINDOWS 2012/R2) ITS RUNNING FINE AND I CAN SEE IT IN THE SERVER LIST WHEN I JOIN. I GET A "CONNECTING" MESSAGE AND NEVER GET PROMPTED FOR A PASSWORD. EVENTUALLY IT SAYS "CONNECTION FAILED" I AM USING ALL DEFAULT SETTINGS ACCEPT THE ADDITION OF A PASSWORD AND MADE SERVER PUBLIC.

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

setting up and connecting to servers


```
SERVER IS ACTUALLY CRASHED. WE CAN NOT DO NOTHING. WE NEED SOME HELP. PROBLEM OCCURS  
AFTER CREATING A NEW LAW FOR US. YOU CAN FIND THE CRASH LOG MESSAGE BELOW.CRASH  
06302530.ECODMP --BEGIN DUMP--  
DUMP TIME  
06/30/2017 23:25:30 EXCEPTION  
SYSTEM.AGGREGATEEXCEPTION: ONE OR MORE ERRORS OCCURRED. --->  
SYSTEM.REFLECTION.TARGETINVOCATIONEXCEPTION: EXCEPTION HAS BEEN THROWN BY THE TARGET  
OF AN INVOCATION. ---> SYSTEM.MISSINGMETHODEXCEPTION: CANNOT CREATE AN INSTANCE OF AN  
INTERFACE.  
AT SYSTEM.RUNTIMETYPEHANDLE.CREATEINSTANCE(RUNTIMETYPE TYPE, BOOLEAN PUBLICONLY,  
BOOLEAN NOCHECK, BOOLEAN& CANBECACHED, RUNTIMEMETHODHANDLEINTERNAL& CTOR,  
BOOLEAN& BNEEDSECURITYCHECK)  
AT SYSTEM.RUNTIMETYPE.CREATEINSTANCESLOW(BOOLEAN PUBLICONLY, BOOLEAN SKIPCHECKTHIS,  
BOOLEAN FILLCACHE, STACKCRAWLMARK& STACKMARK)  
AT SYSTEM.ACTIVATOR.CREATEINSTANCE(TYPE TYPE, BOOLEAN NONPUBLIC)  
AT SYSTEM.ACTIVATOR.CREATEINSTANCE(TYPE TYPE)
```

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

server crashes; this is a small fraction of the post, players are actually posting entire log messages and begging for help trying to figure them out

the final three are about player-side issues

LAPTOP MODEL ?

ACER ASPIRE V3-571G CPU: I5 3210M 3,1GHZ

INTEGRATED GPU: INTEL(R) HD GRAPHICS 4000 WITH
128MB DEDICATED

RAM: 8GB

GPU: NVIDIA GEFORCE GT 630M WITH 1GB DEDICTED
VRAM

OS: WINDOWS 10

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

computer configurations

CAN I CONTROL THIS GAME WITH AN XBOX CONTROLLER? I CAN MOVE LEFT/RIGHT/FRONT/BACK, BUT I CAN'T TURN THE CAMERA. I TRIED CHANGING THE INPUT KEY SETTINGS, BUT THAT HAS ONLY MADE IT WORSE.

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

questions about input (and languages)

@RENTECHD JUDGING FROM DISCORD I
THINK THIS TURNED OUT TO BE A 5.6-
RELATED ISSUE, UNSURE IF REPORTED/
FIXED YET, WILL HAVE TO CHECK, OR
ASK @RAVNSTER IF HE KNOWS
ANYTHING MORE ABOUT IT?

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

bug reports and other technical issues; there's a lot of German text in here too, though

HOW THE GAME WORLD WORKS

this is a theme incorporating five topics that emerged from our computational analysis—it's related to players' acquiring knowledge about the game, developing strategies, and asking about specific techniques

49
SO APPARENTLY FERTILIZER DOESN'T JUST
FERTILIZE A SPECIFIC PLOT BUT AN AREA.
THE EXACT SIZE OF THIS AREA IS A MYSTERY
TO ME AS OF YET.....I NOW HAVE 330 BASE
NITROGEN IN ONE PART OF MY FARM WITH A
MINIMUM OF 66 IN OTHERS.....COULD WE GET
A GRID OVERLAY OF FERTILIZER AOE (LIKE
WHEN WE CLAIM PLOTS OF LAND) IT'S VERY
MUCH NEEDED.....

HOW THE GAME WORLD WORKS

this first topic is about farming; trying to figure out the mechanics of fertilizer, for example

WHAT DETERMINES HOW MUCH A CART CAN HOLD, LIKE HOW MANY LOGS, OR HOW MANY STONE? IS IT THE TYPE OF ROAD/GROUND THE CART IS ON - CAN YOU CARRY MORE WOOD IN A CART ON A STONE ROAD THEN ON DIRT? OR THE TYPE OF LOAD (LIKE THE CART CAN CARRY MORE STONE THEN DIRT ETC ON A STONE ROAD THEN A DIRT ONE)? WHAT DO STONE ROADS DO FOR YOU OVER DIRT ONES? CAN LOGS BE USED FOR ROADS?

HOW THE GAME WORLD WORKS

or how materials and construction work in the game

SMALL ADDENDUM, 1X RAW ROAST, 1X WILD STEW,⁵¹
AND 1X CAMPFIRE STEW GIVES 3200 CALORIES AND
142.2 SP/DAY SO IT'S A BETTER COMBO FOR
3500-4000 CALORIE STOMACHS WITH CAMPFIRE
CREATIONS :) ALSO A GOOD CALORIE INTENSIVE
BUT FAIRLY SUSTAINABLE COMBO IS CAMPFIRE
STEW X1, HUCKLEBERRY PIE X1, AND RAW ROAST
X1 FOR 3300 CALORIES TOTAL AND 139 SP/DAY,
JUST LEVEL UP BIG STOMACH ONCE AND YOU'RE
GOOD TO GO, CHEAP AND EASY :)

HOW THE GAME WORLD WORKS

or even how the in-game nutrition system works (which is important because it's related to skill points

PLACE YOUR TRAPS WITH SPACE TO STAND UNDER THEM, OR HAVE A SPACE NEAR THEM WITH A ROOF. THAT WAY YOU CAN GO UNDER THE ROOF UNDERWATER AND YOU WON'T FLOAT WHEN YOU SELECT THE TRAP. THAT'S WHAT I DO (STAND UNDER THE TRAP WITH MY HEAD HITTING THE UNDERSIDE OF IT)

HOW THE GAME WORLD WORKS

this topic is very specific advice, very fine-grained, here's what to do in this exact situation

WHY NOT? THEY ALWAYS SAY THEY GO FOR REALISM, THEN THEY DEFINATELY SHOULD SWITH BACK TO LEARNING BY DOING INSTEAD OF THOSE STUPID RPG-STYLE SKILLPOINTS, IDLE-EATING YOUR WAY TO HIGH SKILLS, YEAH...

YOU GET A BETTER WOODCUTTER BY CUTTING LOTS OF WOOD, TO BE ABLE TO CUT LOTS OF WOOD YOU NEED TO PLANT ENOUGH TREES TO CUT OR NEED SOMEONE WHO PLANT'S THEM FOR YOU, YOU CAN'T/DON'T WANT TO PLANT THAT MANY TREES, WELL THEN YOU CAN'T GET BETTER AT WOODCUTTING, SIMPLE AS THAT

HOW THE GAME WORLD WORKS

this excerpt comes from a topic focused on leveling up or getting better items—this particular post is interesting because it demonstrates something that we'll see more of in the next theme

GAME COMMUNITY AND VISION

ONE INTERESTING THING ABOUT MELTDOWN IS THAT IT'S NOT AS ENVIRONMENTALLY DEVASTATING AS PEOPLE THINK. THE AREA IN RUSSIA IS BASICALLY A MASSIVE NATURE PRESERVES WITH EVEN WOLVES RETURNING TO THE ECOSYSTEM. THEY AREN'T SURE WHY BUT IT SEEMS EVEN THOUGH IT'S NOT GOOD FOR THE ANIMALS IT IS FAR FAR PREFERABLE TO HUMAN PRESENCE. JUST SAYING THAT NUCLEAR FALLOUT DOESN'T ALWAYS REFLECT WHAT THE GAME FALLOUT WOULD LEAD YOU TO BELIEVE.

GAME COMMUNITY AND VISION

this topic focuses on what the game experience should look like—this post is taken from a thread where folks are debating whether it should be possible to have a nuclear meltdown as an in-game event (they get some of their facts wrong here—assuming they’re talking about Chernobyl, that’s actually in Ukraine, on the border with Belorussia, but it’s still interesting to see them comparing the game with the “real world”)

56
SORRY FOR THE DELAY, HERE IS THE UPDATED VERSION OF CLAYSTK FOR ECO ALPHA 5.6. PLEASE
REPORT ANY ISSUES YOU MAY HAVE WITH THE TOOLKIT BY COMMENTING BELOW OR CONTACTING ME
ON DISCORD. SUGGESTS ARE WELCOME. ANY MODS WHICH MAY HAVE DEPENDENCIES OF CLAYSTK
BASE MOD WILL BREAK UPON UPDATING TO THIS VERSION INSTALLATION:EXTRACT INTO MODS
FOLDER. MODS INCLUDED: CLAYS TOOLKIT BASE MODCONTAINS THE SAVING AND CHAT FEATURES
FOR MODS TO BASE OFF OFNOW ALSO PROVIDING A LIST OF ONLINE USERS, ADMINS AND ONLINE
ADMINS HOMESGIVE YOUR PLAYER THE ABILITY TO TELEPORT INTO ONE OF THEIR HOMES. AT A COST
AND/OR WITH LIMITATIONS/SETHOME [HOMENAME] - ADD THIS LOCATION TO THE LIST OF HOMES/
REMOVEHOME [HOMENAME] - REMOVE THIS HOME FROM LIST/HOME-LIST - DISPLAY A LIST OF ALL
THE HOMES YOU HAVE SAVED/HOME [HOMENAME] - TELEPORT TO HOMENAME DAILY REWARDSGIVE
YOUR AWESOME PLAYERS DAILY GIFTS/DAILY - COLLECT YOUR DAILY GIFT VOTE REWARDSIN
COLLABORATION WITH ECOSERVERS.IO I AM PROUD TO PRESENT VOTE REWARDS.CURRENTLY ONLY
REWARDS USERS A SET AMOUNT OF SKILL POINTS/VOTE PROVIDES YOU WITH LINK TO VOTE FOR THE
SERVER/REWARD <INT> 0 FOR SKILLPOINTS 1 FOR ITEMS/APIKEY - ADD AN ECOSERVERS.IO API KEY
[ADMINONLY]/REWARDSKILLPOINTS -SET A VLAUE THAT YOU WANT TO REWARD TO YOUR PLAYERS
WHEN THEY CAST THEIR VOTE [ADMINONLY] SET SPAWNSET SPAWN WITH EASE OF USE/SETSPAWN -
SETS THE CURRENT ADMIN'S LOCATION AS THE SPAWN LOCATION/SPAWN - BRINGS THE PLAYER
BACK TO SET SPAWN LOCATION ADMIN COMMANDSINCLUDING /ONLINE AND /ONLINE-COUNT/
ADMINS TO DISPLAY THE LIST OF ADMINS ON THE SERVER/ONLINE-ADMINS TO DISPLAY THE LIST OF
CURRENTLY ONLINE ADMINS MOTDCUSTOM TIMINGS AND MODES (SLOW 1 MESSAGE EVERY TIME AND

GAME COMMUNITY AND VISION

This has way too much text to read, but it's an excerpt from a mod—a game modification—that's being developed and kept up by a player (not an official game designer). In short, there's at least one player who has a different vision of the game and knows enough about game programming that they release a slightly different version of it for other people to play.

57
THE GAMERS OF TODAY ARE THE ONES WHO WILL BE IN POSITIONS OF POWER LATER IN THEIR LIVES. THE 'MESSAGE' OF THIS GAME IS THAT EVERYONE IS IMPORTANT IN A SOCIETY, AND CHANGE CANNOT HAPPEN UNLESS EVERYONE IS BROUGHT-ALONG IN GREATER WISDOM AND KNOWLEDGE. EVERYONE DOES CONTRIBUTE TO POLLUTION AND SYSTEMS OF ENVIRONMENTAL ABUSE, INASMUCH AS THEY ARE COMPLICIT IN CONSUMING THE PRODUCTS WHICH COME FROM THOSE ACTIVITIES. CORPORATIONS ARE ONLY PROVIDING SERVICES WHICH ARE IN-DEMAND BY THE POPULACE. STOP THE DEMAND, AND YOU STOP THE CAUSE OF THE UNSUSTAINABLE BEHAVIORS. LEGISLATION CAN HELP, BUT ULTIMATELY IT IS EDUCATION FOR ALL WHICH IS GOING TO CHANGE THE WORLD...

GAME COMMUNITY AND VISION

reflecting on the direction and the future of the game; this is a post taken from a thread where people are debating whether it makes sense to focus the game on an individual level given that large corporations are responsible for so much ecological harm;

this is really interesting because it is an explicit debate about the learning purposes of the game.

2. HOW IS LEARNING⁵⁸ EVIDENCED IN THESE DISCUSSIONS, IF AT ALL?

GAME AS A COMMODITY

You'll remember that our first theme focused on players' discussions of the game as a commodity.



GAME AS A COMMODITY

Here, Eco is seen pretty much just as a video game.



GAME AS A COMMODITY

Players are interested in acquiring this video game, so they're asking questions about price, and platform, etc. That's great news for the game developers, but from our point of view



GAME AS A COMMODITY

It's really hard to say that there's learning going on here. We could make the argument that players are learning to be consumers, but there's just not enough to really show us the kind of learning potential that we're interested in.

TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

When we start to think about technical discussions and troubleshooting, though, things start to get more interesting.



TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

Here, players are thinking about Eco as a technological system. It's software running on hardware, and you have to understand the software and the hardware to get it to work properly.



TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

There's a lot of asking questions and going back and forth—having a dialogue dedicated to helping people figure out how to get everything to work.



TECHNICAL DISCUSSIONS AND TROUBLESHOOTING

So, yes, we feel comfortable saying that there's some learning going on here! It's not the kind of learning that we expected when we began this study—it's not about content knowledge in the game, it's about the IT skills needed to run the game the way one wants to, but that's still got to be a relief to parents that their kids are learning a marketable skill out of playing this video game.

HOW THE GAME WORLD WORKS

Our third theme encompasses player discussions about how the game world works.



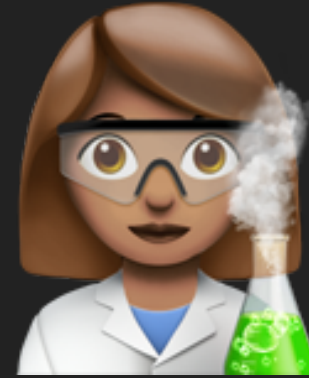
HOW THE GAME WORLD WORKS

Here, players see Eco not as a commodity, not as a technical system, but as a game world that they can interact with.



HOW THE GAME WORLD WORKS

There are good ways and bad ways to interact with the world, and so the player community is involved in asking how that world works, what the best ways are to interact with it, and how to succeed within the system.



HOW THE GAME WORLD WORKS

This is not too different than what Steinkuehler and Duncan found in their study of World of Warcraft forums. We have not done the fine-grained coding that they contribute in their paper, but the process of asking questions about the game system, and how the game models scientific and other processes seems to us to speak to Eco's potential for a kind of disciplinary learning that would be valued in classrooms.

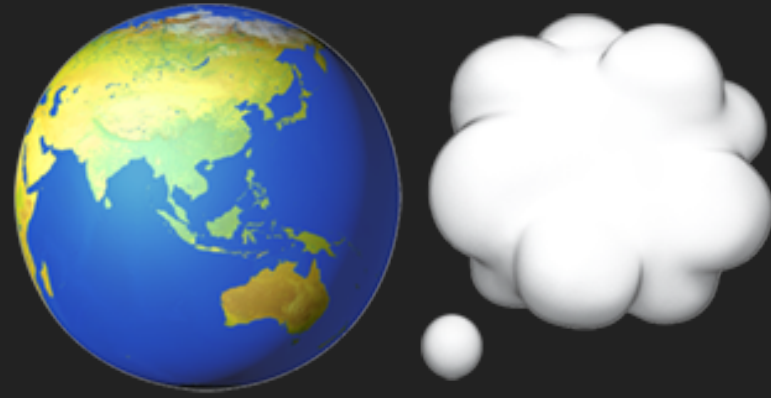
GAME COMMUNITY AND VISION

Our final theme continues this train of thought in a very interesting way.



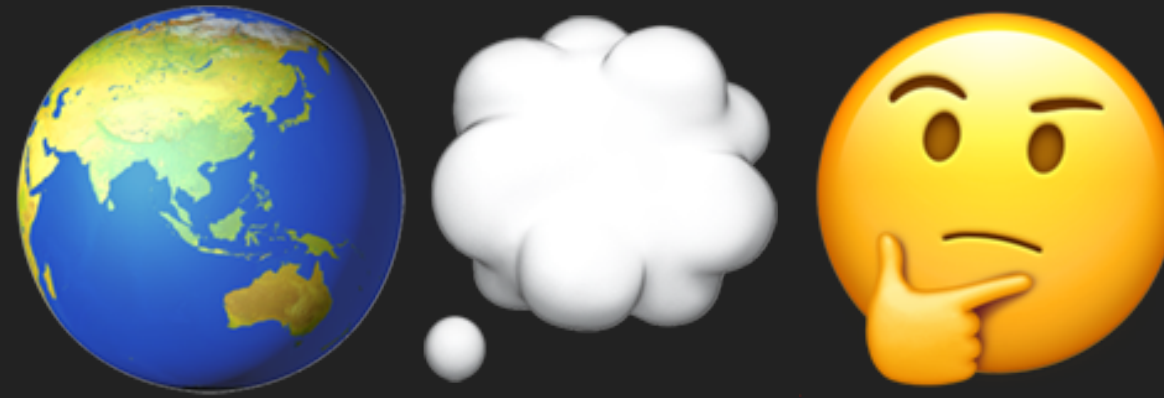
GAME COMMUNITY AND VISION

The community's discussion about their vision of Eco continues to treat it as a game world that models phenomena and allows players to interact with those models. Rather than ask questions about existing models, though, this theme incorporates...



GAME COMMUNITY AND VISION

Speculation, requests, brainstorming, all related to what the game world *should* look like. This is where we see players comment on the authenticity of the game world and provide suggestions for how to improve it. This is where we see players design and release modifications for the game to actually come up with their own models.



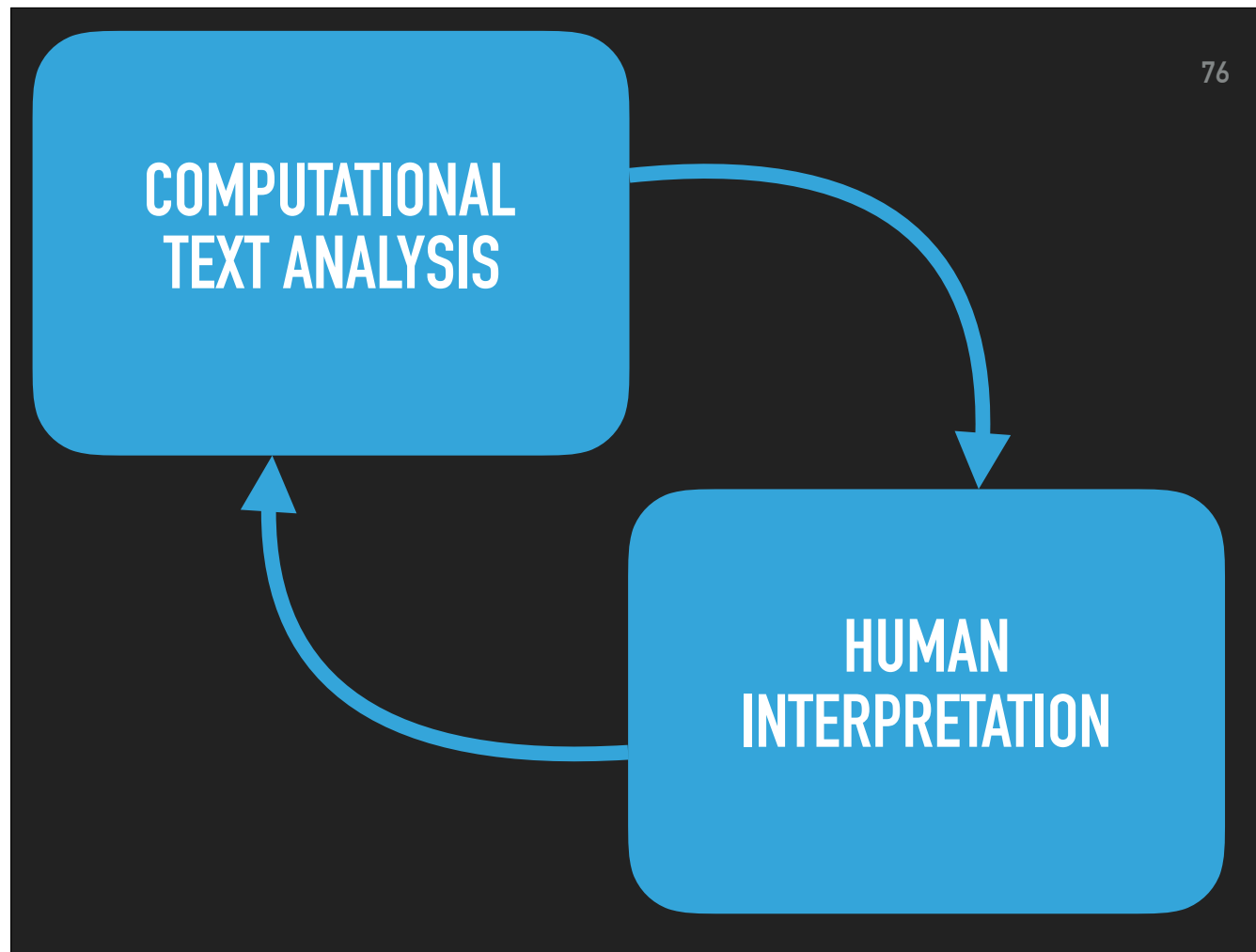
GAME COMMUNITY AND VISION

This puts players into a critical, inquiry-driven mindset that has them asking high-level questions. Rather than just learn about existing models, they're reflecting on whether the models in Eco could actually be improved, which shows at least some attention to how phenomena work in the real world and some willingness to critique models of those phenomena.

3. WHAT ARE THE AFFORDANCES OF CGT?

75

Of course, during this presentation, we have been just as interested in methodology as in our actual findings.



Computational Grounded Theory is characterized by a use of both computational text analysis and human interpretation in ways where the strengths of each is used to compensate for the weaknesses of the other.

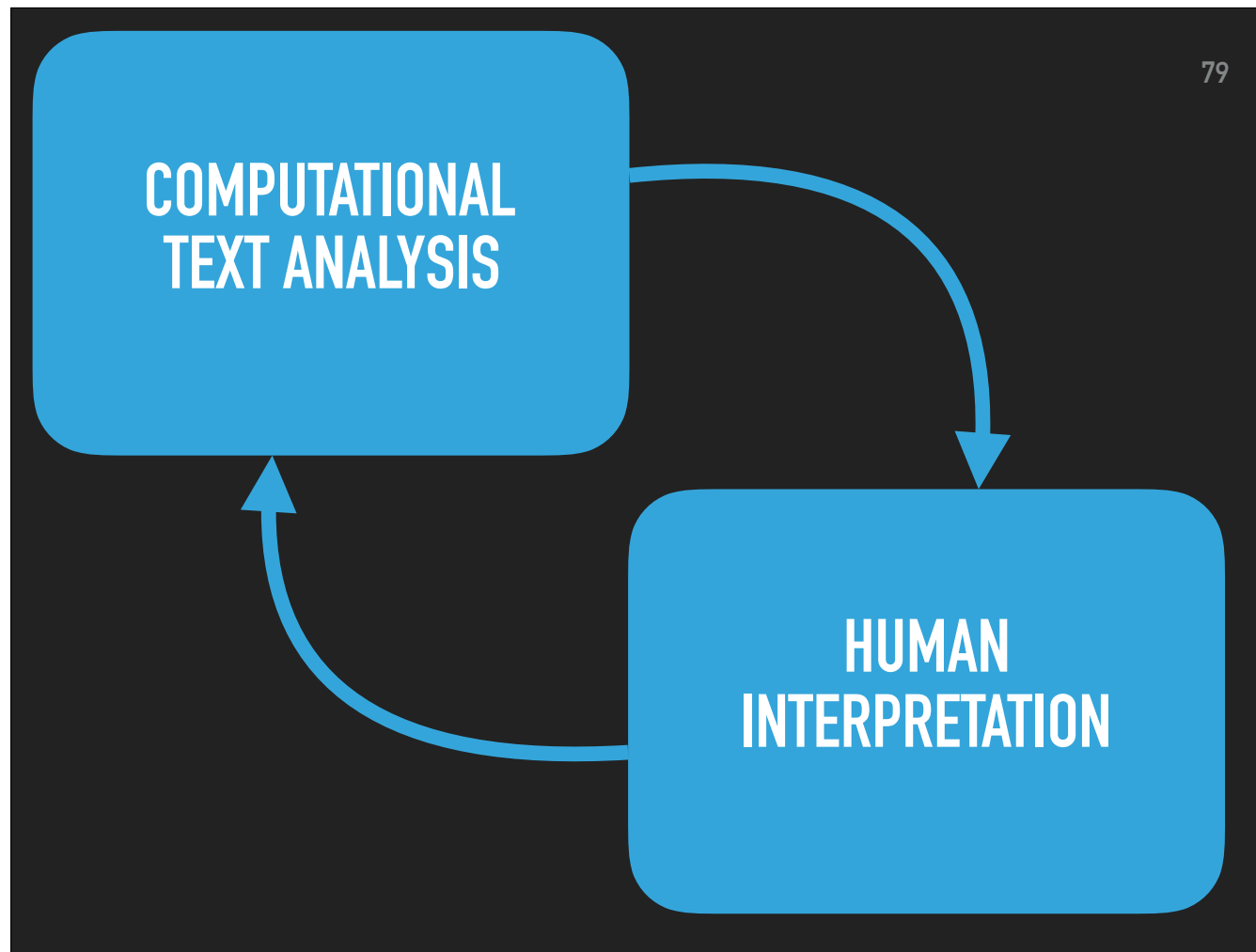
COMPUTATIONAL TEXT ANALYSIS

Using computational text analysis, we were able to consider nearly 11,000 posts in our analysis and have an algorithm identify some obvious (or, at least, obvious to an algorithm) themes within those posts. We're very happy that we didn't have to review all of those posts on our own, and we found the "topics" emerging from our computational analysis to be a helpful starting point for us in telling us where to begin our own review.



HUMAN INTERPRETATION

That said, there's no doubt that the algorithm could have done this on its own. The algorithm sometimes made distinctions that weren't important for the questions that we were asking, and even when it did make subtle distinctions, there's no way it could have told us what the substance of those distinctions was.



We repeat that we haven't yet followed the entire cycle that Nelson proposes. We're currently working on adding some more in-depth human interpretation of data, after which we'll ask ourselves whether and how to bring computational text analysis back into the picture. From where we currently stand, though, we feel that CGT has a lot of promise for blending the best of computational and human analyses and for opening up new opportunities for educational technology researchers.

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THANK YOU! QUESTIONS?