

Changing Realities

User Creation, Innovation, and Hacking in Second Life



22C3 Private Investigations
29 December 2005

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an assertion

User creation drives the inevitable democratization of communication, play, work, education, therapy, and research as amateurs claim domains formally protected by expertise, economics, and tradition.

(And experts will not handle it well)

another



Hacking -- the exploration of design spaces -- is a **beneficial** form of user creation

with those in mind



Please consider

- “Play” versus “work”
- The concept of place
- Identity and community
- Education and learning

40 minute roadmap



- Overview of Second Life
- User-creation within SL
- Why this all matters

what is it?



Second Life is a unique digital world

- Not a game
- Completely built and owned by the residents

Best fictional analogs are Stephenson's Metaverse from "Snow Crash" or Vinge's Otherverse from "True Names"

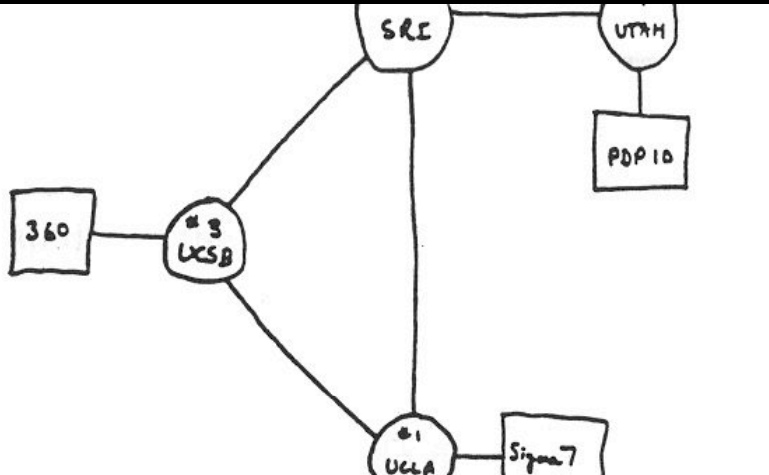
digital world?



- Various called “online worlds”, “synthetic worlds”, “persistent state worlds”, etc
- Short, working definition: a consistent and persistent place that allows many simultaneous users to interact

So, where did these places come from?

the building blocks and missing pieces



“the internets”

```
Pick a direction and go beat on a  
When you are injured, return here.  
When you are ready to move on, go  
Try the 'scan' command. It is usef  
[ 38/38hp 100/100mn 150/150mv 506t  
Advice: In need of assistance? Kin
```

Welcome to **Combat Training #3**

Welcome to the cage room. The a
captured some monsters for you t
are various monsters and crimina

After you kill each monster, get
corpses with the command '**get all**
command '**wear all**' to wear your

When you are done with the corpse
it to your God. Your God will re

Between combat, you may need to
points. You can '**rest**' to regene
'**sleep**'. Sleep will refresh you
will be less aware of your surro

MUD1

VR



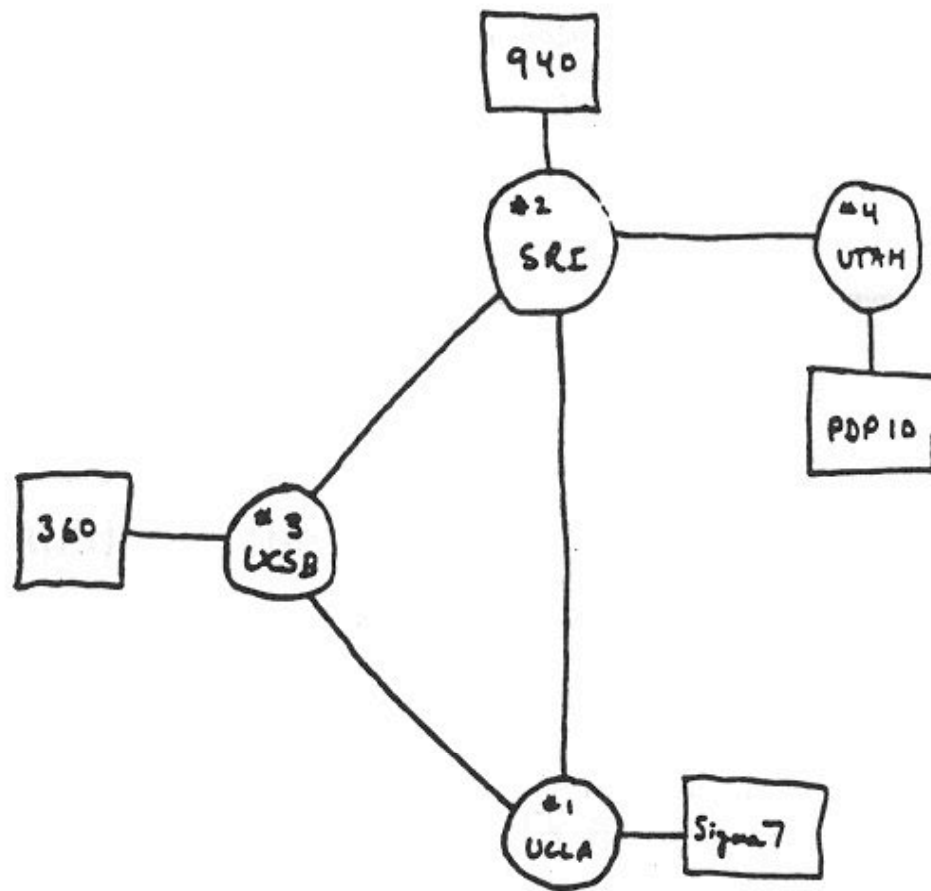
Hi Terry!

day for a
y for trea



Avatars

arpanet (1969)




THE ARPA NETWORK

DEC 1969

4 NODES

FIGURE 6.2 Drawing of 4 Node Network
(Courtesy of Alex McKenzie)

large scale, distributed creation



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The Free Encyclopedia

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Main Page

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Today's featured article



Baroque was a [cultural movement](#) and [style](#) in [European art](#), originating around [1600](#) in [Rome](#). The [Council of Trent](#) (1545–63), in which the [Roman Catholic Church](#) answered many questions of internal reform, addressed the representational arts by demanding that paintings and sculptures in church contexts should speak to the illiterate rather than to the well-informed. This turn toward a populist conception of the function of ecclesiastical art is seen by many [art historians](#) as driving the innovations of [Caravaggio](#) and the [Carracci](#) brothers, all of whom were working (and competing for commissions) in Rome around 1600. The appeal of Baroque style turned consciously from the witty, intellectual qualities of [16th century Mannerist](#) art to a visceral appeal aimed at the senses. It employed an iconography that was direct, simple, obvious, and theatrical. Baroque art drew on certain

In the news

- [Palestinian](#) president [Yasser Arafat](#) is transferred to [intensive care](#), possibly in a [coma](#) or [braindead](#). 
- [Republican U.S. President George W. Bush](#) is elected to a second term, defeating [Democratic](#) challenger [John Kerry](#); see [election results](#).
- [Sheikh Zayed bin Sultan Al Nahayan](#), the longtime ruler of [Abu Dhabi](#) and president of the [United Arab Emirates](#), dies. He is succeeded by his son [Khalifa bin Zayed Nahayan](#).
- [Aníbal Acevedo Vilá](#) is [elected](#) to the post of [Governor](#) of [Puerto Rico](#). A full recount scheduled to begin on [November 9](#), is less required because the margin of victory is

place?



Web -- even Web 2.0 -- is primarily text-based and sequential

- Lacks physicality
- Lacks simultaneous interactivity
- Non-text creation still comparatively rare -- eg, blogs versus podcasts

richard bartle and roy trubshaw (1980)

```
Pick a direction and go beat on a monster.  
When you are injured, return here, and I will heal you.  
When you are ready to move on, go down from this room.  
Try the 'scan' command. It is useful.  
[ 38/38hp 100/100mn 150/150mv 506tnl] >  
Advice: In need of assistance? Kind hearted? Ask a >*Light* [R/C] member fo
```

```
+-----+  
Welcome to Combat Training #3
```

```
Welcome to the cage room. The adepts of mud school have  
captured some monsters for you to kill. In the cages around you  
are various monsters and criminals. Kill them all!
```

```
After you kill each monster, get all of the equipment from the  
corpses with the command 'get all corpse'. You can then use the  
command 'wear all' to wear your newly won equipment.
```

```
When you are done with the corpse, 'sacrifice corpse' to give  
it to your God. Your God will reward you with gold for this.
```

```
Between combat, you may need to rest or sleep to regenerate hit  
points. You can 'rest' to regenerate hit poin  
'sleep'. Sleep will refresh you faster than  
will be less aware of your surroundings.
```



MMORPG (1996)



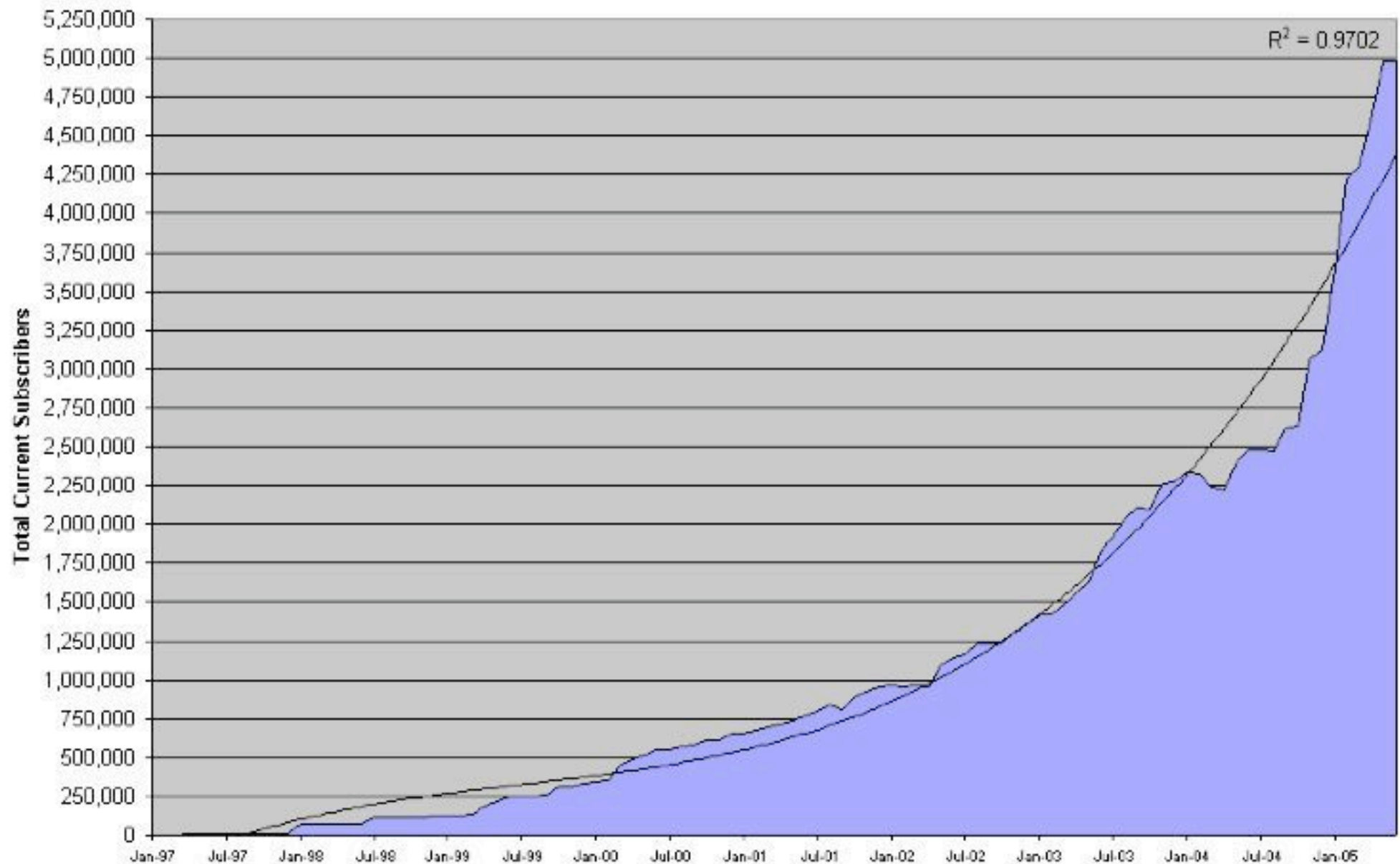
Leveling as signal characteristic

- D&D-style
- Experience-based progressing vice skill based
- Acquisition and hoarding



scale

Total MMOG Active Subscriptions (Excluding Lineage, Lineage II, and Ragnarok Online)



intangible goods

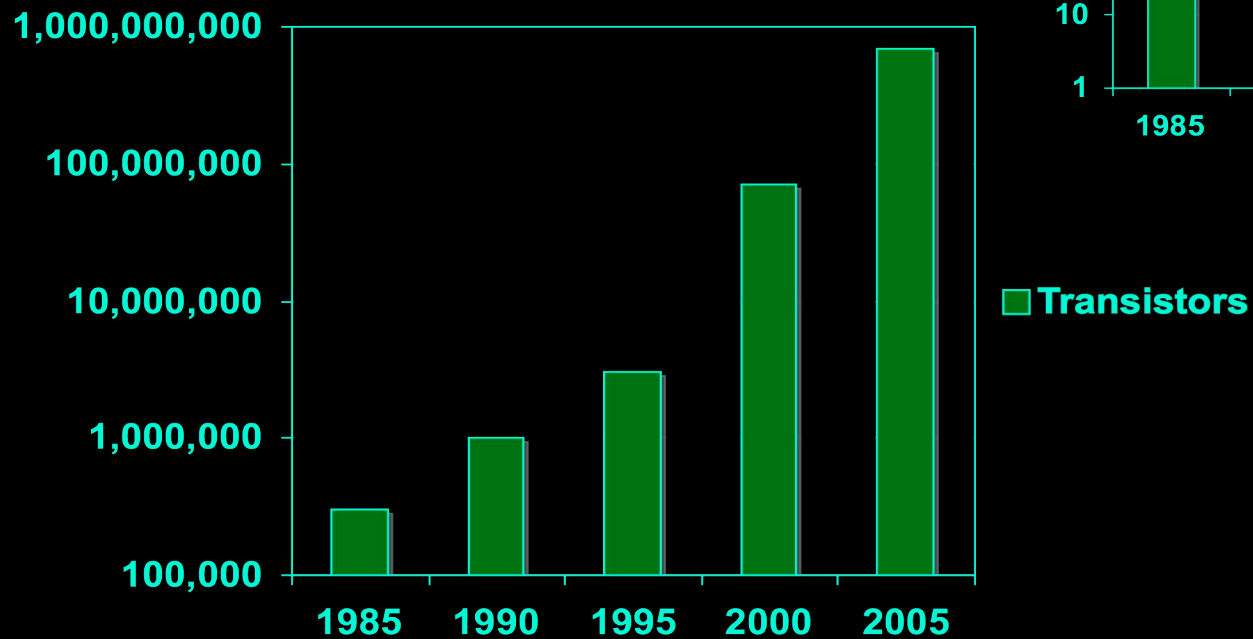
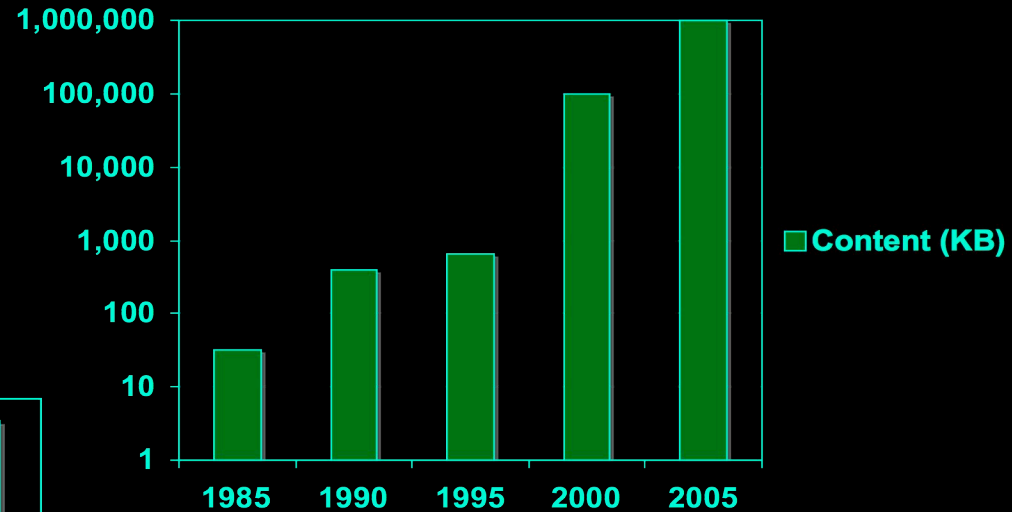
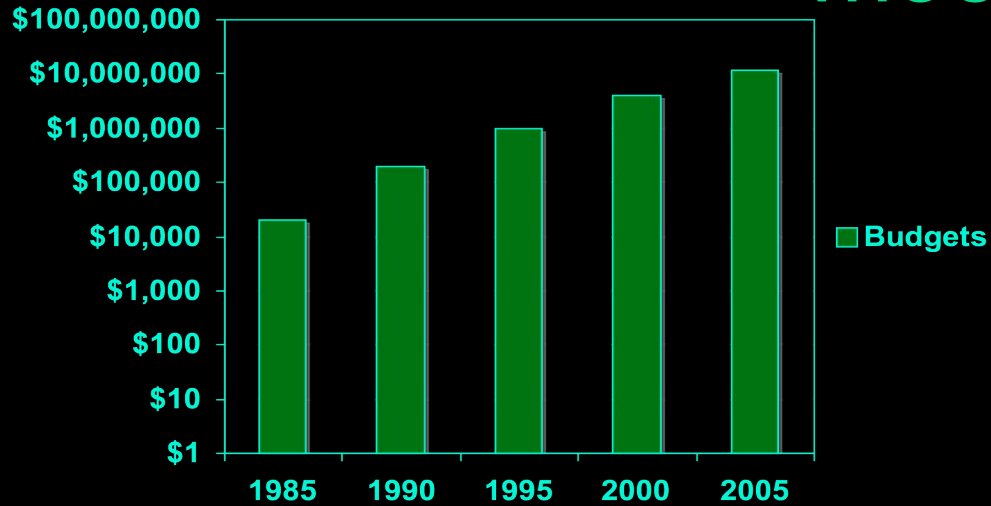
[Gallery](#)

Sort by: [Customize Display](#)

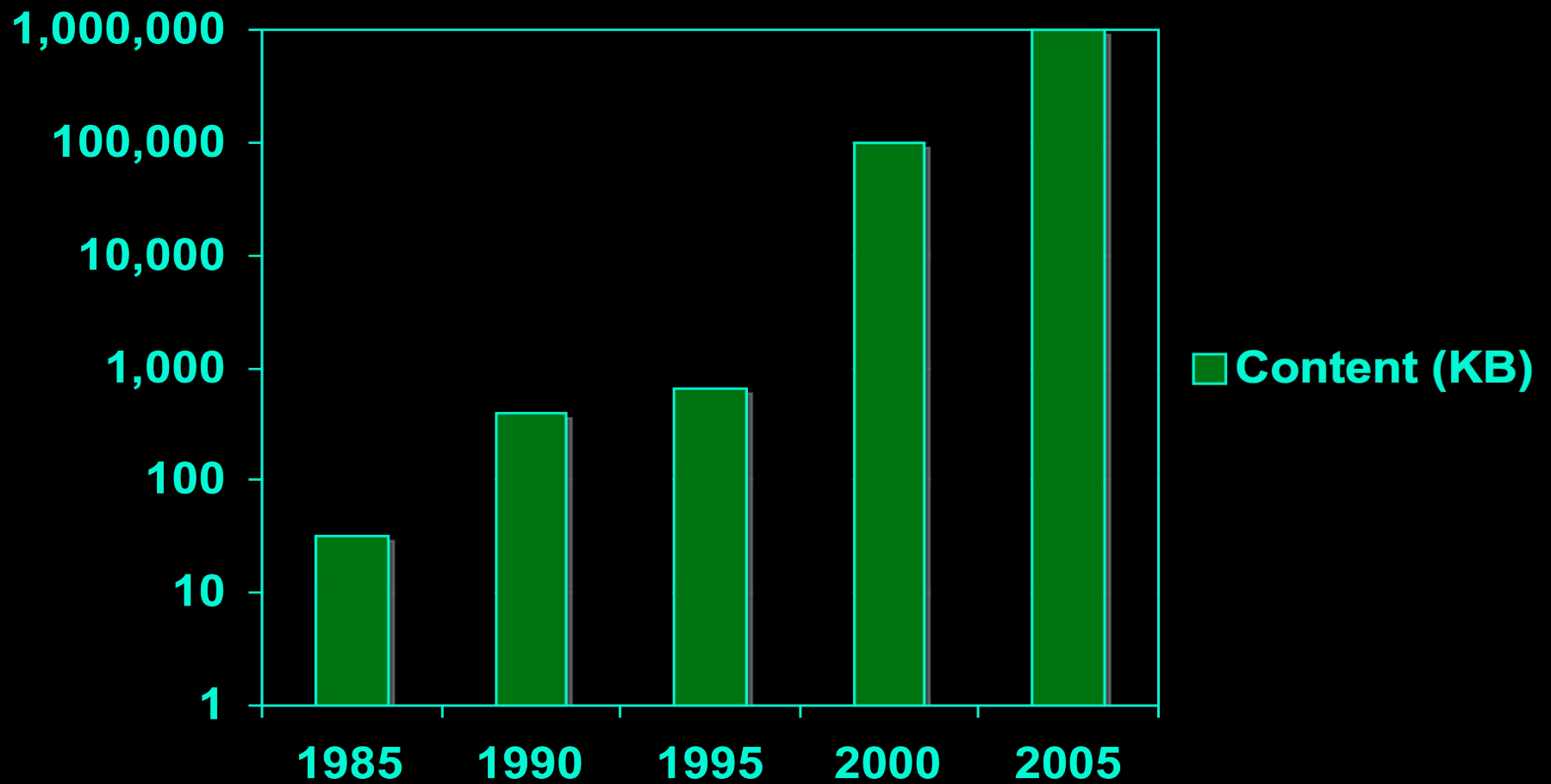
<input type="button" value="Item Title"/>	PayPal	Price ▼	Bids	Time Left
 *** AWESOME SWG RANKED DARK JEDI KNIGHT! *** Play SWG like it was meant to be played on Kettemoor		\$610.00	5	37m
<hr/>				
 Star Wars Galaxies Jedi Master		\$1,050.00	-	3d 22h 31m
<hr/>				
 Star Wars Galaxies Jedi Account SWG		\$894.00	1	2d 05h 12m

- Worldwide digital goods trade of US\$1 billion
- This allows players to shortcut paths through game design space

moore exponential curves

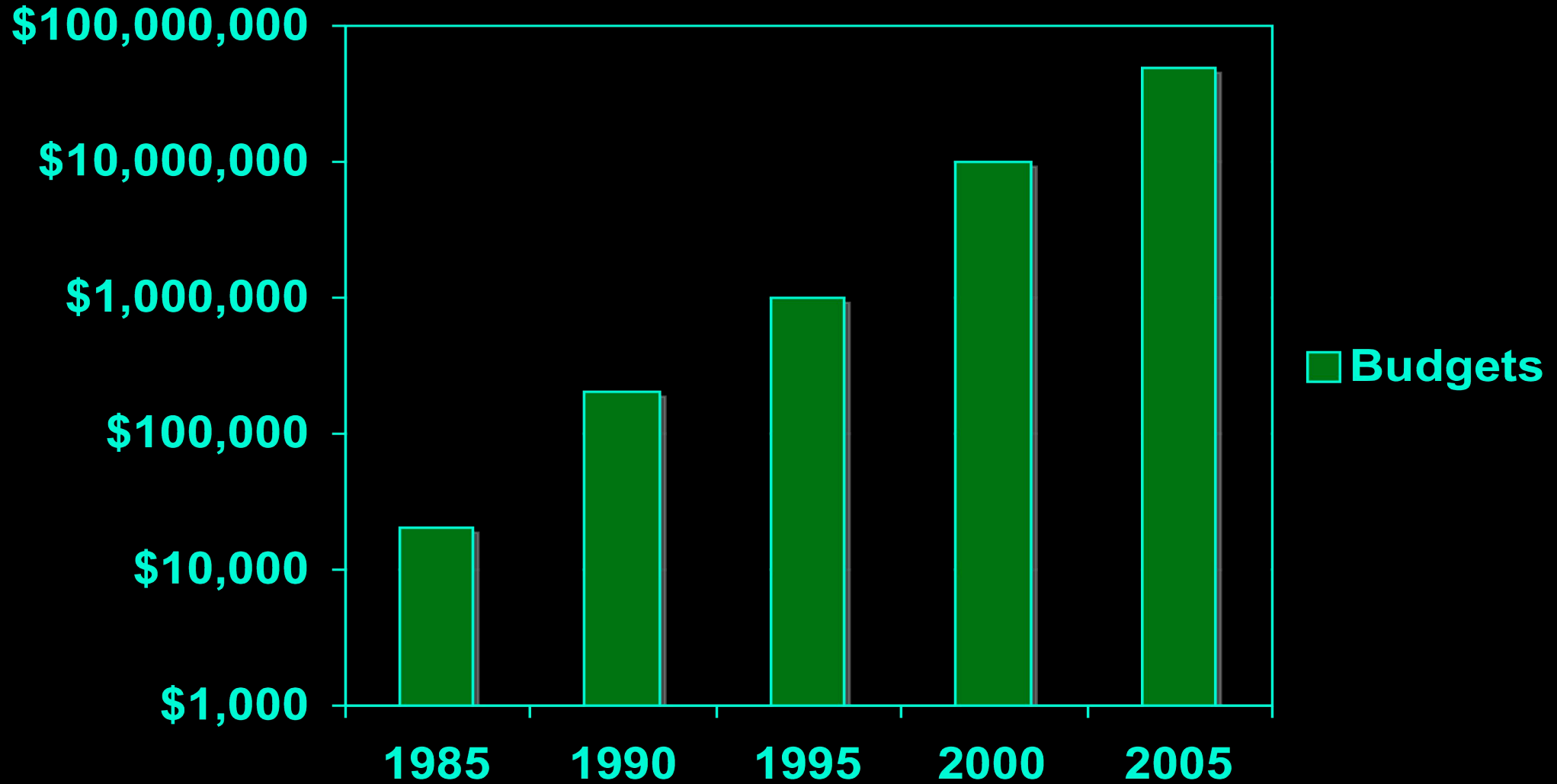


quick, make stuff!

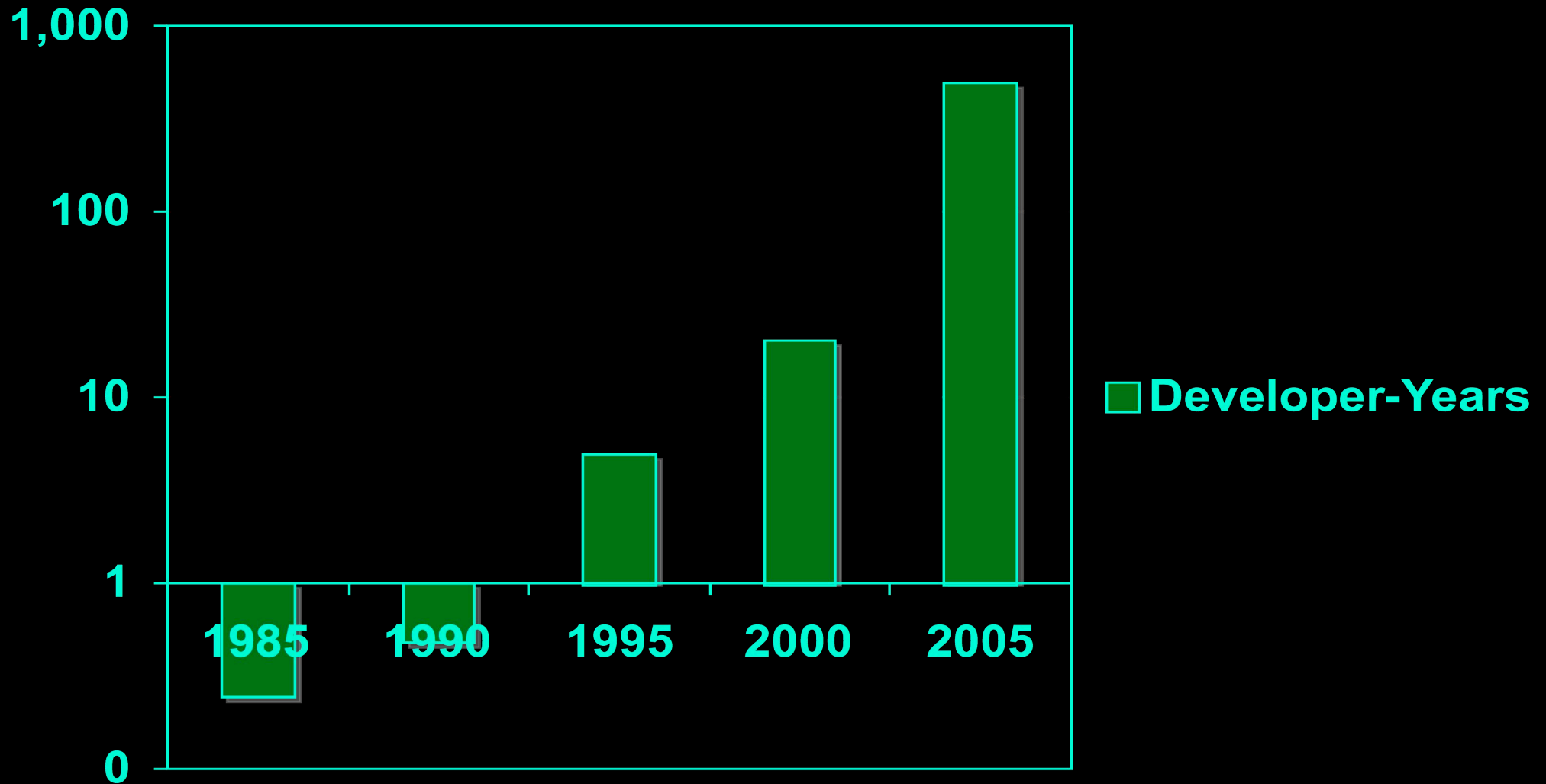


CDs and DVDs have driven this as well

but making stuff is expensive



especially by game companies



information asymmetry

Increasing populations provide resources for distributed attacks to resolve information asymmetry -- ie, thotbott -- which compounds the problem.



creation



The primary business challenge we face with art is that the costs for first-class art continue to rise faster than our market is expanding, and the MMOGs require tremendously more art assets than the vast majority of standalone games.

- Gordon Walton (when VP at SOE)

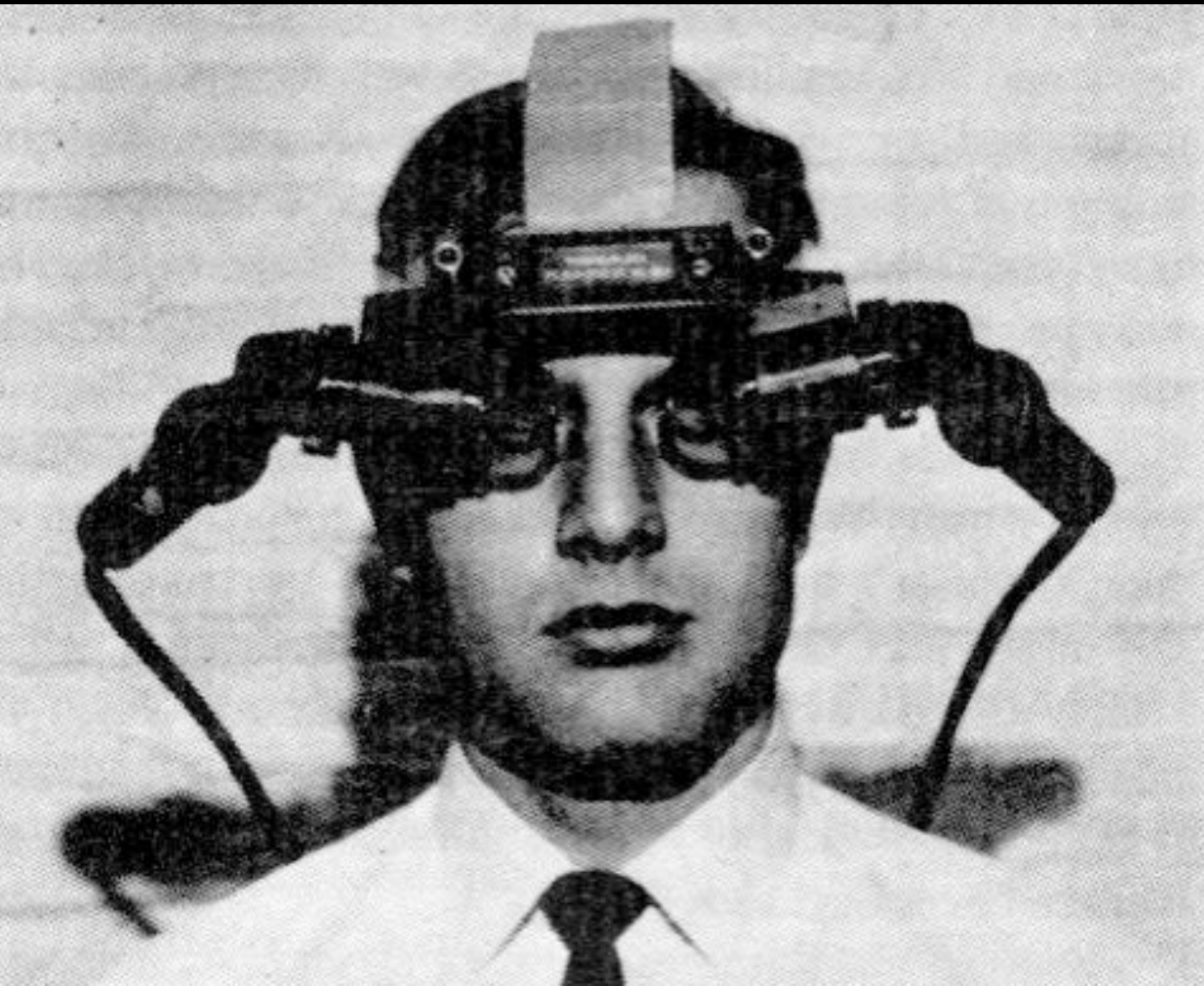
fighting dirty

“You may not exploit [Company], or any games or services offered on [Company] for any commercial purpose.”

“You may not buy, sell or auction . . .”

“. . . you may not . . . commercially exploit or commercially distribute your Variations . . .”

vr (1960-ish)





vr/CAD-CAM (1990)



(Nearly) collaborative creation



marginal costs

Atoms basically suck



farmer and morningstar (1986)

Hi Cathy.

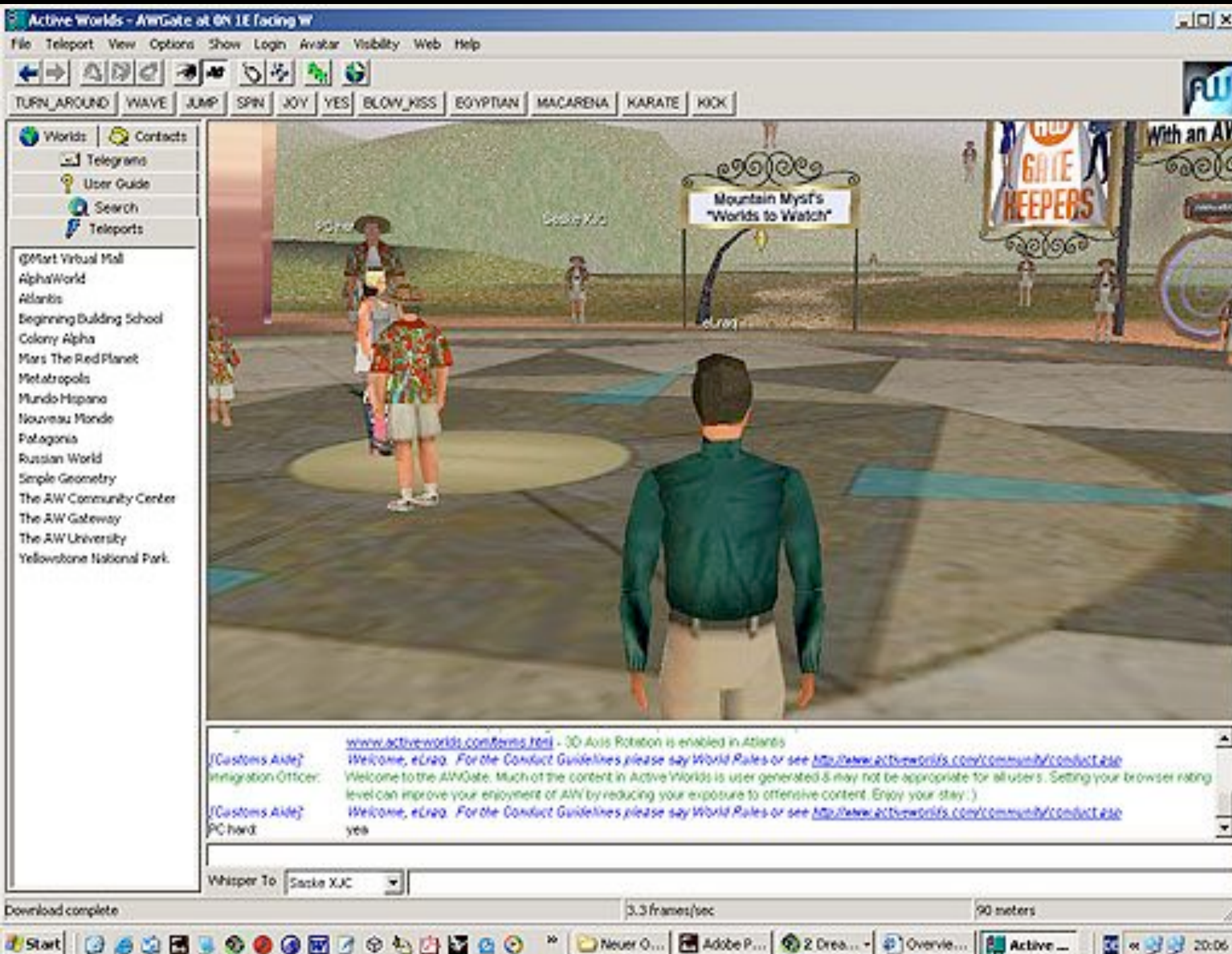
Hi Terry!

Nice day for a quest!

It's always a nice day for treasure hunting.



activeworlds



but something had been lost



LambdaMOO had demonstrated the power of user-creation in a generalized world

- Without it, avatar worlds run into the same content creation crunch, or
- Worse, without the ability to create, the lack of game becomes more apparent

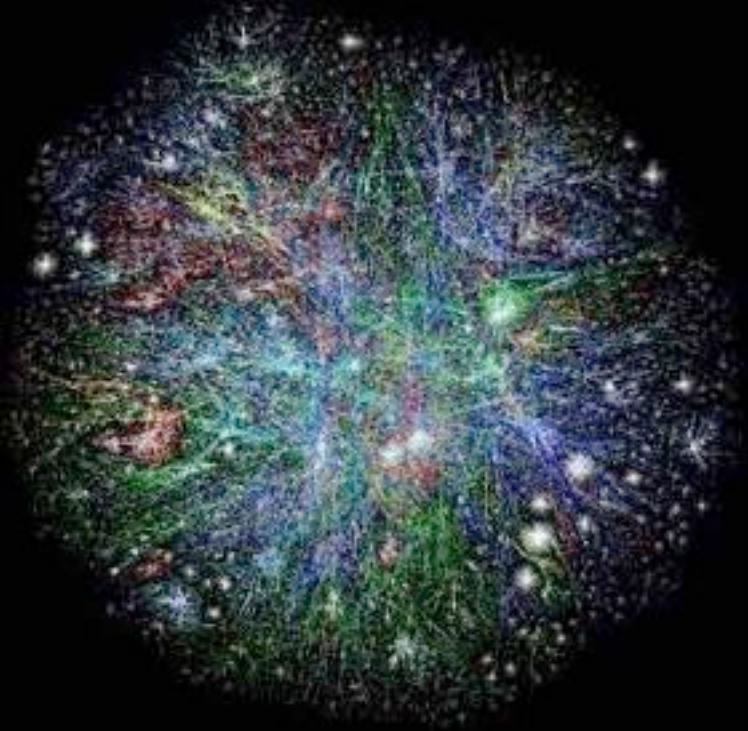
closing the loop



Second Life (2003)



why now?



- Broadband
- Routing capacity/low pings
- Consumer 3D acceleration



which allows . . .



A new approach to world building

- Stream all content via broadband
- Extremely dynamic content
- Apply distributed/grid computing

building a world

Changes to business model

- Virtual real-estate sales
- Ownership
- Buy land as needed
- Not a subscription model -- residents currently pay between \$0/mo and \$16,000/mo



world growth

1U P4 Server



June 2003



October 2003

1750 cpus = 115 square km



February 2004



December 2005

terraflops computing



- Over 1 Terraflop devoted to physical simulation
- Rigid-body dynamics
- Navier-Stokes driven wind and clouds

who's in Second Life



- > 100,000 customers
- 20% monthly growth

demographics



- SL community older and more gender balance than games
- Gender neutral by hours of use
- Women and older residents have higher conversion than young males
- Median age of 35
- 22% international (1000 German users)
- Real world skills translate into digital world



economic activity

Second Life in the last 30 days:

- 50,000 residents
- 180,000 distinct items were sold
- 4.8 million p2p transactions
- US\$4.5 million in internal economy
- US\$400k exchanged
- 75 million IM messages

how is this achieved?



Second Life has 60,000 hours of use per day
Approximately 25% of this time is spent creating
 $60,000 \text{ hours} * 25\% / 2000 \text{ hours/yr} = 7.5 \text{ user-years/day!}$

That's a 2700 person content development team,
which would cost US\$270 million/year!

recall the ownership status quo

“You may not exploit [Company], or any games or services offered on [Company] for any commercial purpose.”

“You may not buy, sell or auction . . .”

“. . . you may not . . . commercially exploit or commercially distribute your Variations . . .”



property rights

In Second Life, residents own their creations

What does this mean?

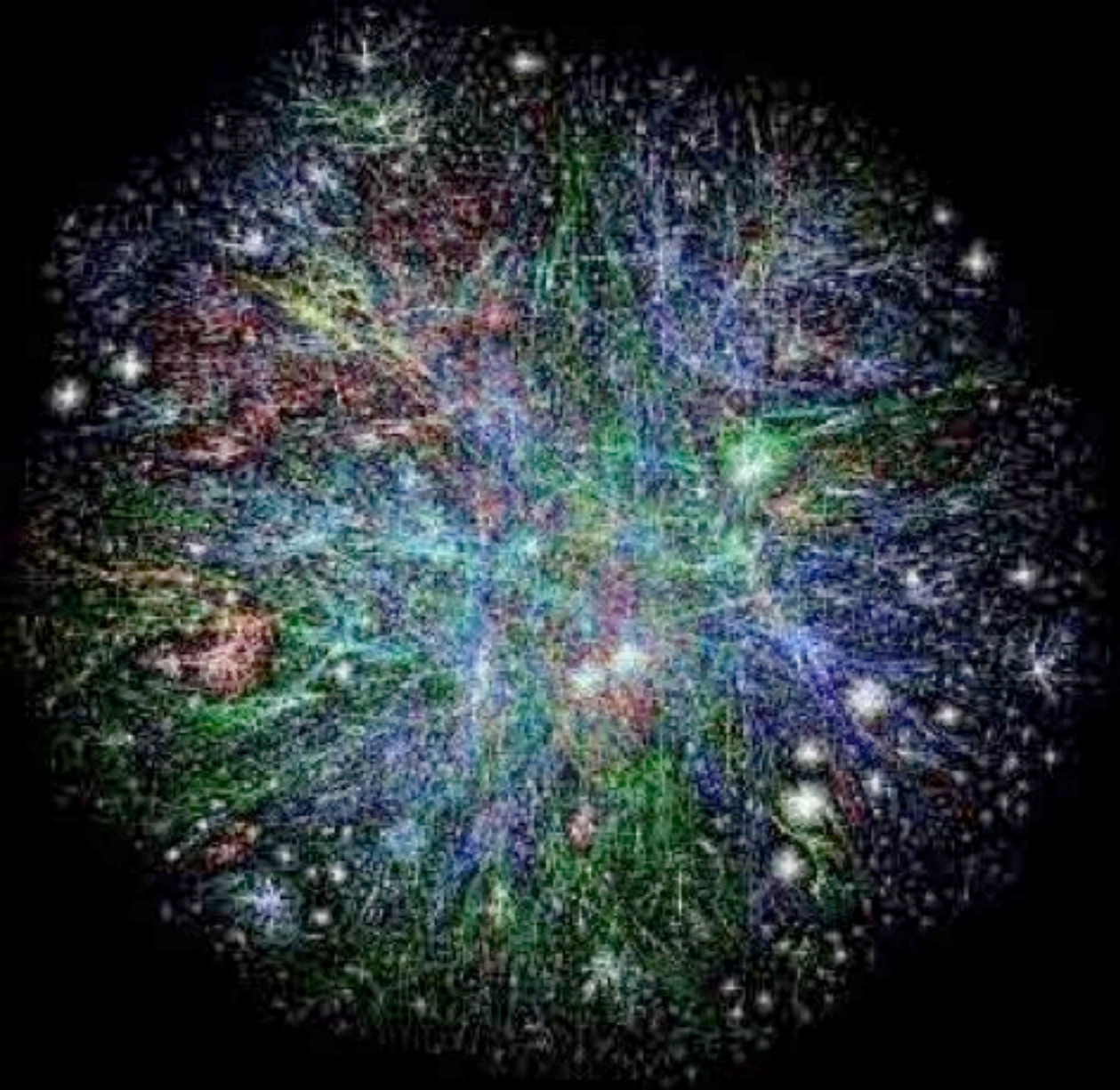
- Residents retain their Intellectual Property rights to their creations
- Residents may buy and sell L\$ for real world \$
- Residents may license their creations back into the real world

them's fighten' words



So what about this “inevitable” transformation?
What are residents doing?

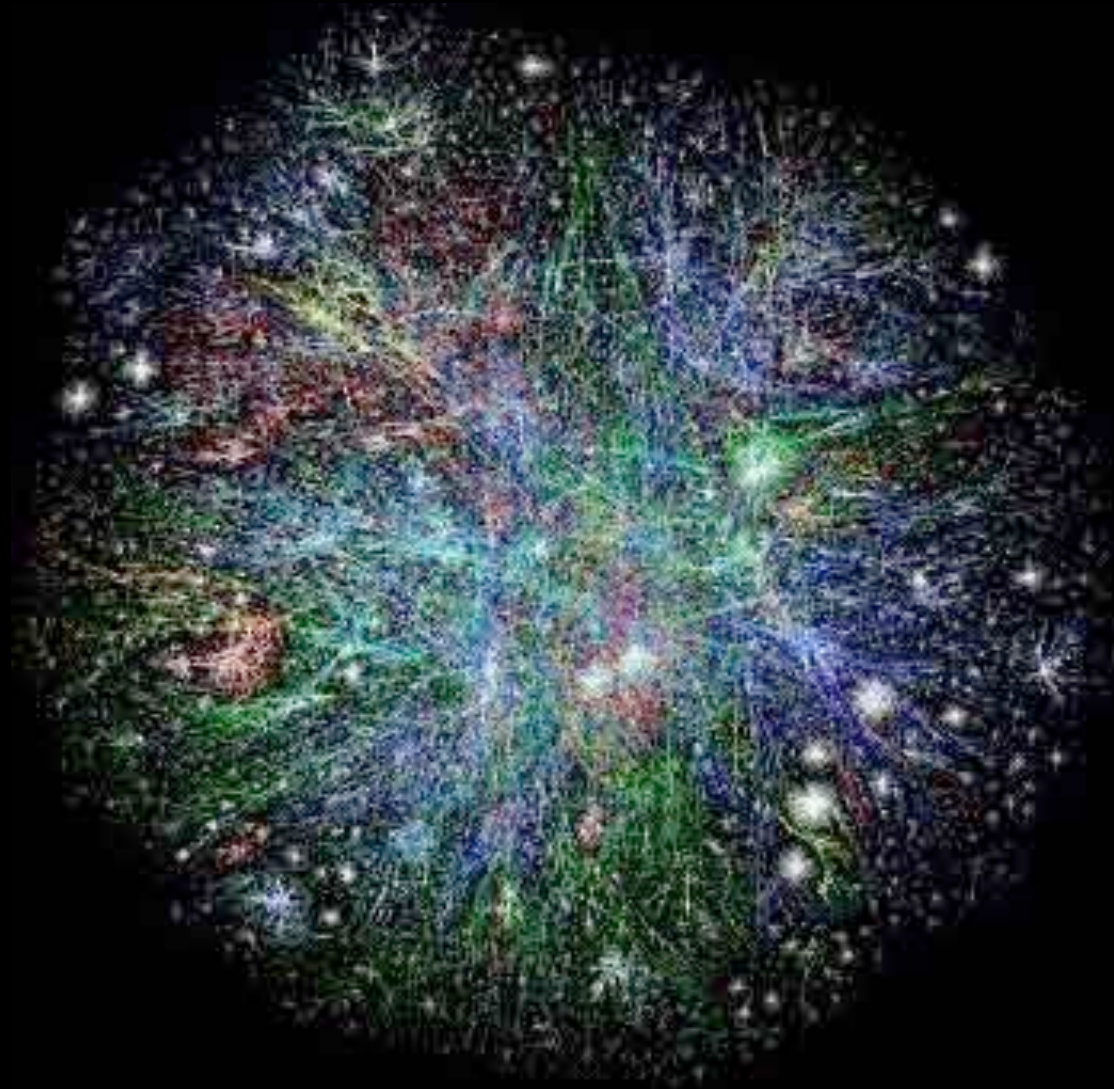
examples



The web sets a precedent for the success of radical decentralization

how big?

- 600 billion web pages
- 1.4 billion auctions
- 50 million blogs





user-creation

- Creation and meta-creation
- Value in text and networks



Current web user-creation is primarily text-based and sequential

What happens when collaboration becomes simultaneous and moves beyond text?



atomistic construction

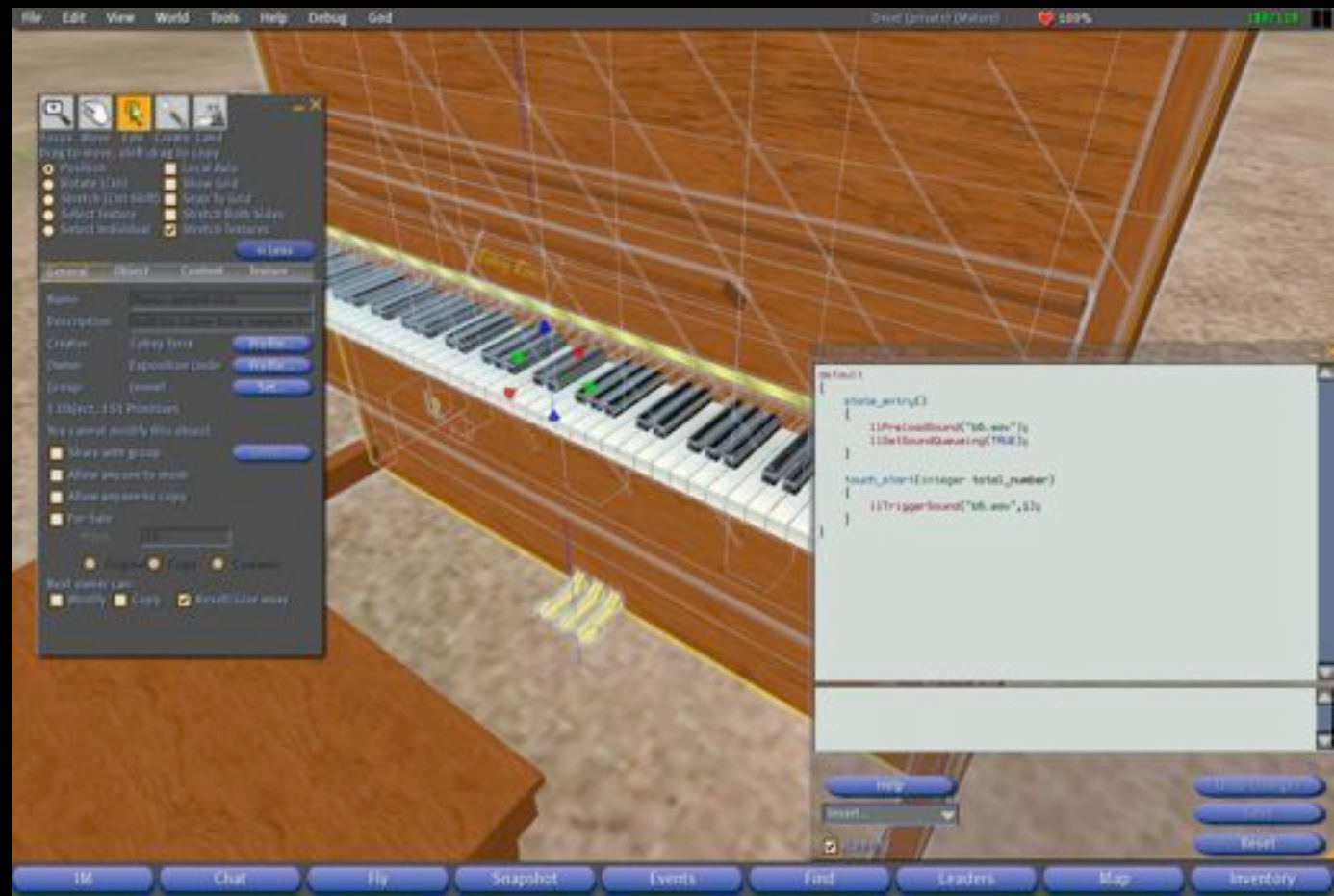


a tale of two pianos





a piano worth playing



traditionally “hard” problems



3D creations (~100M)
Humans (~10M)
Programming (~30M loc)
~10 Terabytes of user content



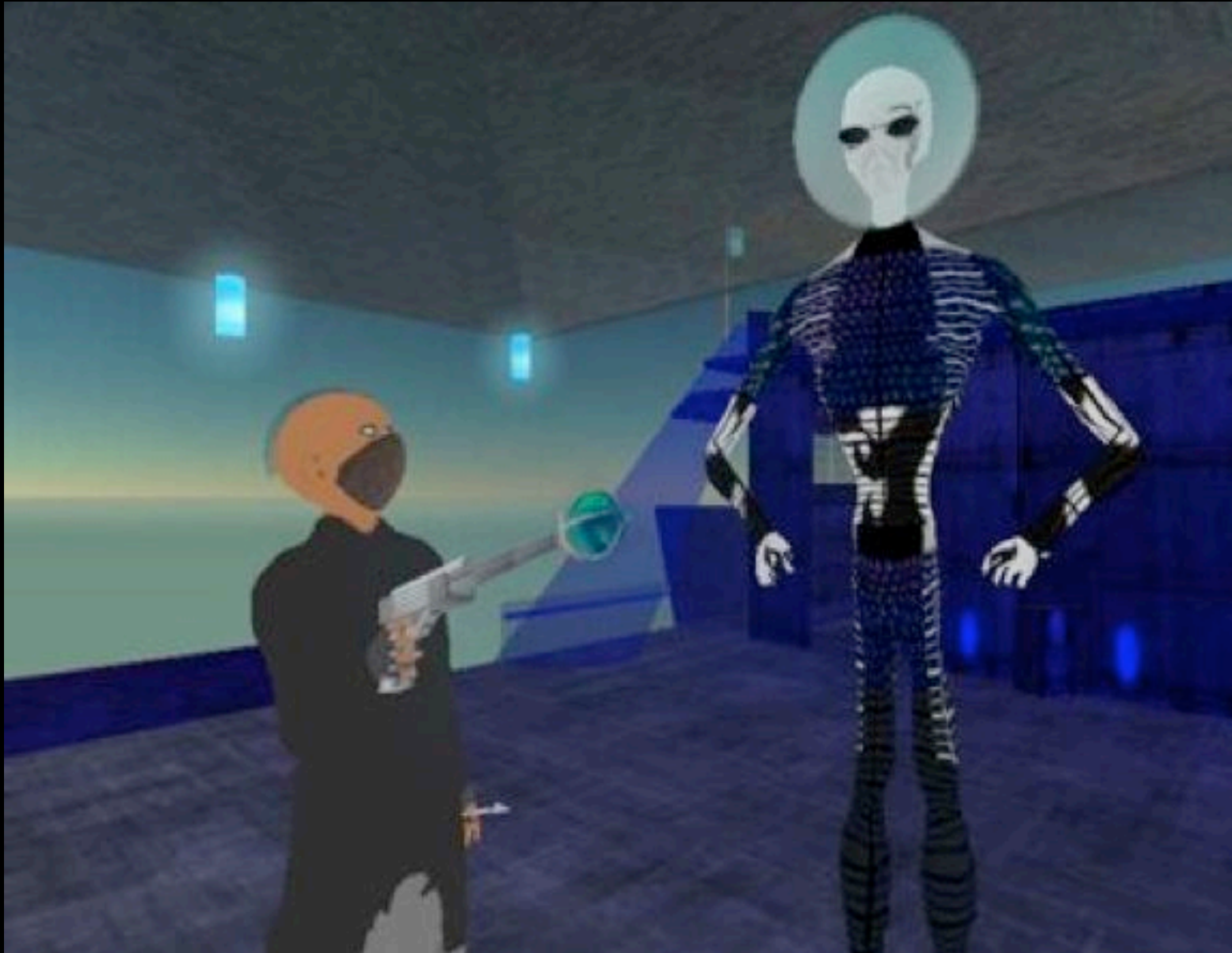
power to the people!



Give them the tools



unintended consequences



Second Life

User-creation impacts on

- Communication
- Play
- Work
- Education
- Therapy
- Research



communication



“Traditional”

- The Metaverse Messenger
- SL Herald
- New World Notes



New World Notes

Wagner James Au reports first-hand on Second Life society as it develops.



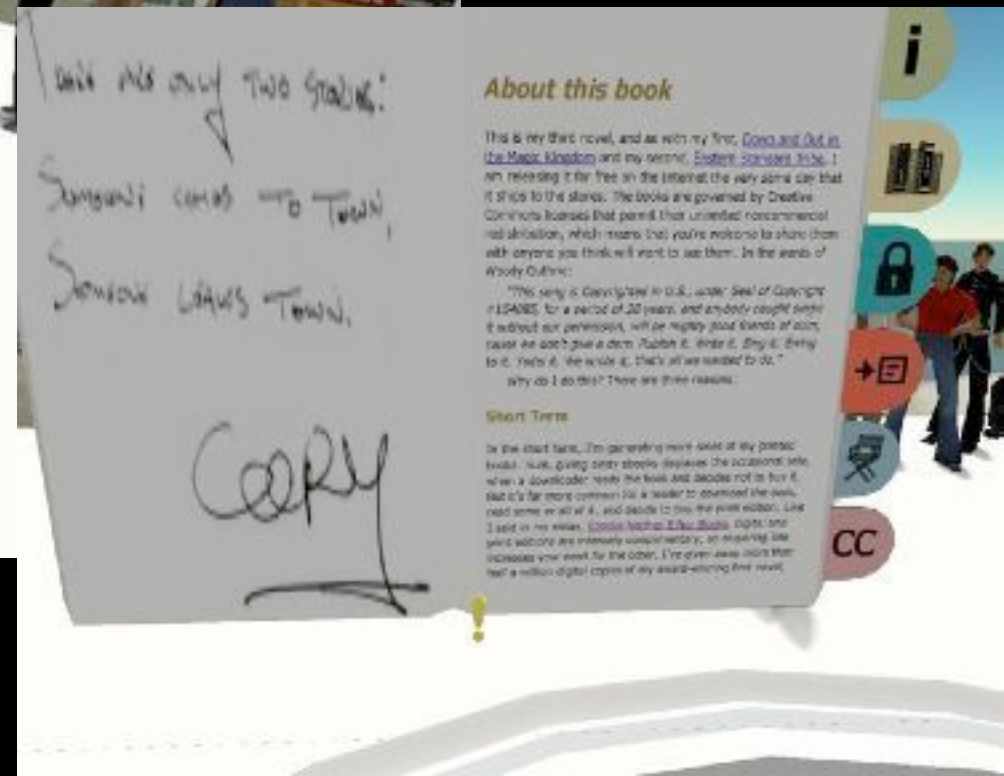
memorials



crossing the magic circle



virtual book signings

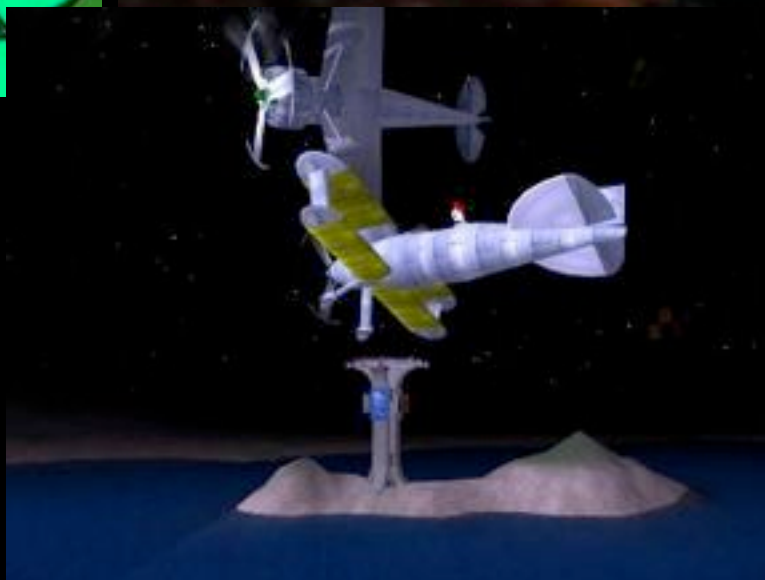


collaborative multimedia





play



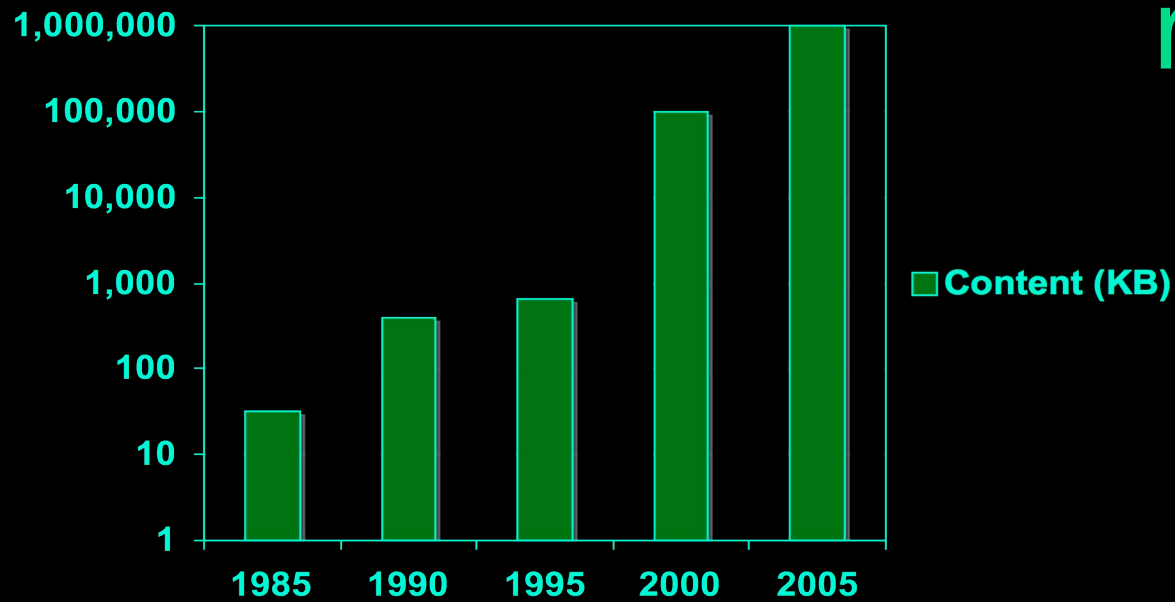
While SL isn't a game, there is lots of play within it -- just like the real world!

every scale

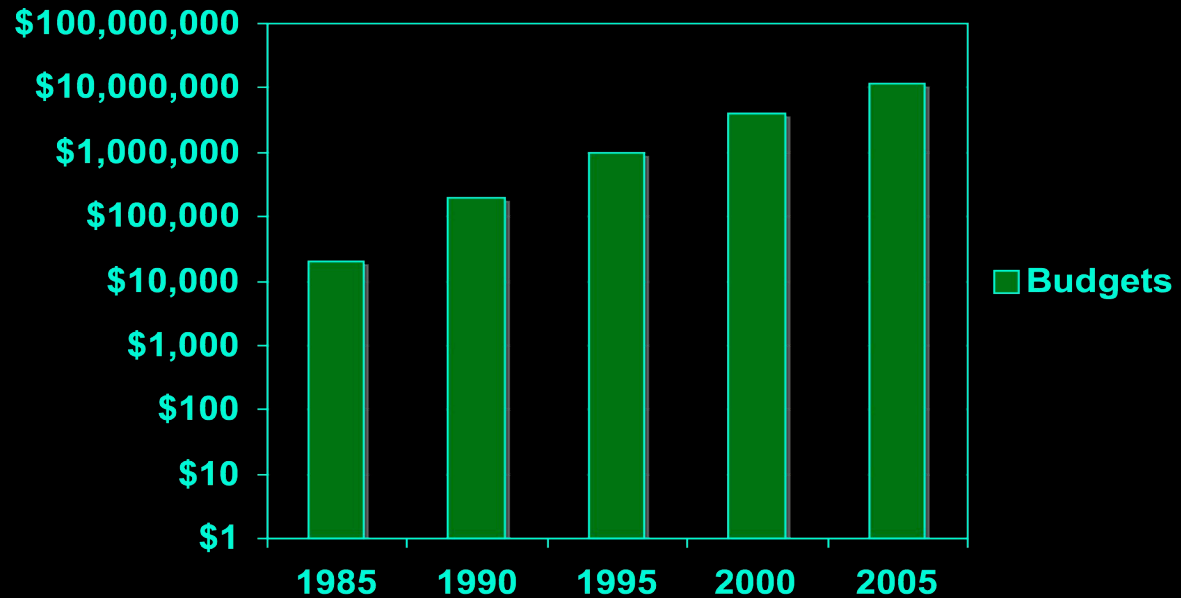


Grinding the world
Eva
Tringo -- GBA!!

real opportunity



Avoiding the “death of games”
by leveraging user creation!



real work in SL



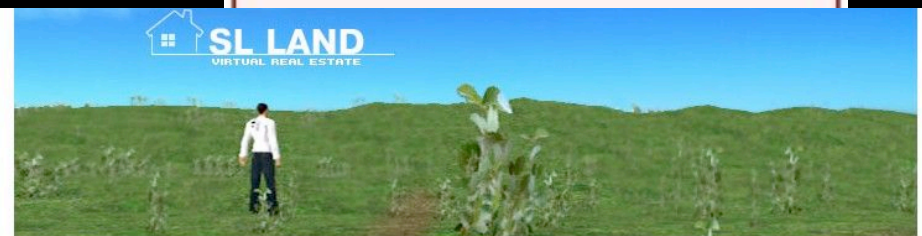
- RW in SL group
- Bedazzle
- Avalon
- UC Davis and Dartmouth disaster preparedness
- Travel agency



SL work in real life

We enjoy long walks on the beach, sunsets, and tacos.

Always Intimate.
MetaAdverse



Statistics

Properties Listed: 844

Land Available: 1,205,344 m2

Average Size: 1,428 m2

Average Price: L\$9,153

Average Rate: 6.6 L\$/m2

Satisfied Customers: 802

Properties Sold: 1,762

Our Promise

30-Day Money-Back Guarantee

We know that buying land can be a scary investment. If you're not completely satisfied within 30 days of your land purchase return it for a full refund. No questions asked.

Property Search

Rate Range

0 L\$/m2 to 30.0 L\$/m2

Price Range

0 L\$ to 999999 L\$

Display 10 results per page sorted by Rate Ascending

Results 1 - 10 of about 844 (0.11 seconds)

#1 Callisto (152,64) (MLS#270465562700)



Callisto (144, 48)

PG

Callisto

Unknown

L\$4,659

1,024 m2

234 objects

4.5 L\$/m2

View Details

Buy Now

#2 Callisto (152,64) (MLS#270465562708)



Callisto (144, 80)

PG

Callisto

Unknown

L\$4,659

1,024 m2

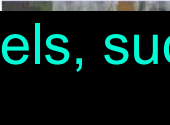
234 objects

4.5 L\$/m2

View Details

Buy Now

#3 Callisto (152,64) (MLS#270499117140)



Callisto (176, 80)

PG

Callisto

Unknown

L\$4,659

1,024 m2

234 objects

4.5 L\$/m2

View Details

Buy Now

- Pixel Dolls
- MetAdverse
- Anshe Chung
- Rathe Underthorn
- Competitors experiment with different business models, such as creative commons, loss leaders, and advertising



charitable giving



- Vertu
- American Cancer Society and the Relay for Life
- Katrina relief

play versus work



Beware false dichotomies

bits versus atoms



- Low marginal cost of reproduction
- Many economies of scale don't apply

The Center for Bits and Atoms

SQUID Labs

eMachineShop.com

Lest you think that bits will stay bits forever . . .

- Neil Gershenfeld and MIT's Center for Bits and Atoms
- Squid-Labs
- eMachineShop

Remember those supposedly “hard” things?

education



Education benefits often attributed to games seem even more applicable to user-creation:

- **Peripheral participation**
- Performance before competence
- Data collection
- Feedback
- Reproducibility

amateur-to-amateur



through the magic circle



Second Life

Results 1 - 5 of about 5 for **Ravenglass (37,101)** (0.00 s)

Phoenix Voyeur Lounge

Explore your kinky side. Voyeurs/exhibitionists/xxx sex/ cyber lol. enjoy
Ravenglass (26, 100) - 704 sq. m. - May 24, 2005 - [Details](#) - [Snapshots](#)

House of Phoenix

Greetings, A/all are Welcome :) Hang out and socialise. Gorean/bdsm/alt lifestyles/vampires/witches/ social outcasts lol
Ravenglass (36, 122) - 5,648 sq. m. - Feb 10, 2005 - [Details](#) - [Snapshots](#)

Starling's Prim Reserve

Dark Star Alliance
 Owned by Starling Glitterbuck
Ravenglass (46, 108) - 1,536 sq. m. - Mar 25, 2005 - [Details](#) - [Snapshots](#)

Ravenglass Commons B

1856 sq m
 Owned by **Ravenglass** Rentals (group)
Ravenglass (64, 80) - 1,856 sq. m. - Dec 29, 2004 - [Details](#) - [Snapshots](#)

Protected Land

Not for Sale
 Owned by Governor Linden
Ravenglass (128, 128) - 6,832 sq. m. - Oct 15, 2004 - [Details](#) - [Snapshots](#)

[Rock The Vote](#) - [Advertising Programs](#) - [About Roam](#)

Sponsored Places

Shop Online

Buy these items at SL Exchange
<http://www.slexchange.com>

PixelDolls Clothiers

Clothing by Nephilaine Protagonist.
 Chartreuse (226, 108)

TREND

Shades, Unisex Hair, Scarves, Prefabs.
 Sandals & Shoes!
 Deneb (95, 150)

Multi Gadget

Multi Gadget by Timeless Prototype
 Horseshoe (226, 18)



snapshots shared:

46,770

snapshots viewed:

2,905,964

snapzilla users:

1,272 total

★ **428** registered

viewing the site:

294 visitors

Limited Edition Christmas Piano
 only until December 31st

Limited Edition Animated Christmas Piano - Only Available Until Dec 31st



snapZilla
 postcards from life # 2

www.slpics.com - pics@slpics.com

Happy Holidays and Thank You for Using Snapzilla! - Cristiano

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email

snapshots for wednesday, december 28, 2005

sort by newest

snapshots per page 15

44 snapshots



rebuilding Phoenix

Wednesday, December 28, 2005 (added 2 hours ago) 0 comments - Viewed 1 time

view from the new kajirae patio

[Winter Phoenix](#) ☆ -

not yet rated



teleport to ravenglass

search nearby

snapzilla spotlight:
 torley's tour de telehub



The inimitable **Torley Torgeson**, one of Snapzilla's most prolific contributors, taken the time to document all of the telehub on the mainland in a series of pictures as Tour de Telehub. In honor of the e



campus Second Life

- Cultural Computing Program at the Siebel Center for Computer Science, University of Illinois – “Art in Virtual Worlds”
- School of Architecture, Montana State University, Bozeman – “Digital Collaboration in Architecture”
- Southern New Hampshire University – “Introduction to International Business”
- Department of Instructional Design and Technology, The Teachers College, Emporia State University, Emporia, Kansas – “Foundations of Instructional Technology”
- University of Colorado at Denver (CU Online) - "Urban Planning in the Gaming World"
- Graduate School of Education and Psychology, Pepperdine University, Malibu, California – “Human Computer Interface”
- School of Architecture, The University of Texas at Austin - "Designing Digital Communities"
- Whittier College, California - "Introduction to Sociological Perspectives on Education"
- University of Southern California - "Multiplayer Game Design"
- Institute of Rural Health, Idaho State University, Pocatello – "Exploring healthcare applications in MMORPEs using the SecondLife platform"
- Center for Innovation in Teaching and Learning, Colorado Mountain College - "Education's Second Life"

therapy

Nine physically disabled people sharing an account with the help of June-Marie Mahay

“My virtual self has the voice I’ve always wanted to have and in many ways allows me to be the person I felt I was born to be.”

- John S/Wilde Cunningham



- Abused teens in Portugal
- Self organizing stroke survivors

circling back to education



Wilde Cunningham and the Brigadoon residents created Live2Give Island, a community build to help others living with cerebral palsy and similar conditions.

“To give them a virtual world where they are free from the limitations of their physical-world environment. To give them hope and allow them to be productive members of a virtual space that they can call their own.”

-- John Lester/June-Marie Mahay

research



- UC Davis Virtual Hallucination project
- Brain Talk Communities
- Neualtenburg
- AI



virtual hallucinations



Peter Yellowlees, MD

James Cook, MD

University of California, Davis

One user, one month

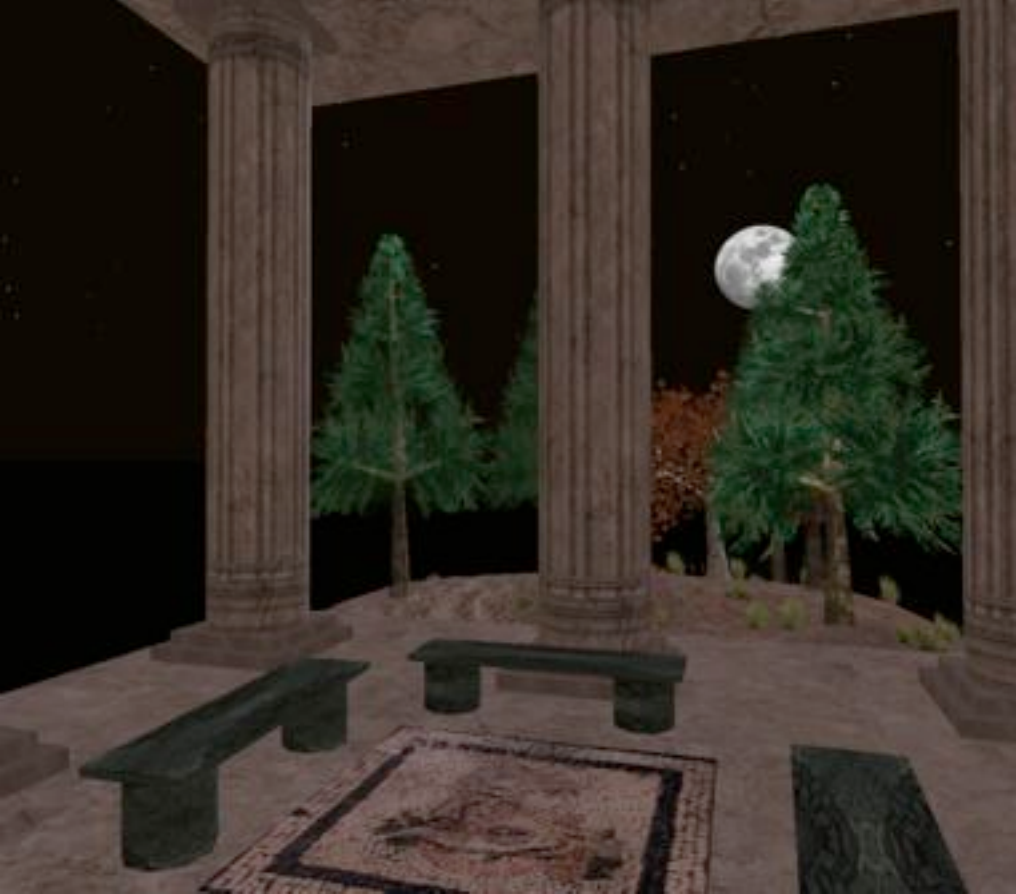
actual patient hallucinations



Medical student education
Family and caregiver education
In-world survey tool - 900 responses
Spontaneous comments



brigadoon island



John Lester, founder of Brain Talk Communities, migrated Asperger's patients and families to SL

"We are aliens in this RL. SL has showed me it is OK to be an alien in a strange new world!"

-- Brigadoon resident Coos Yellowknife



Neualtenburg



Neualtenburg



**Prospectus
Overview
Philosophy
Citizenship
Covenant**

Neualtenburg Constitution

Preamble

All branches of the government are bound to serve the public before the Universal Declaration Of Human Rights, Founding Philosophy, Core and Community Standards without exception.

Article I - The Representative Branch

Section 1 - The Representative Assembly

The Representative Assembly (RA) is a body of democratically elected citizens with different ideological views of its citizens. Its governmental role is to promote the city and perform long-term planning.

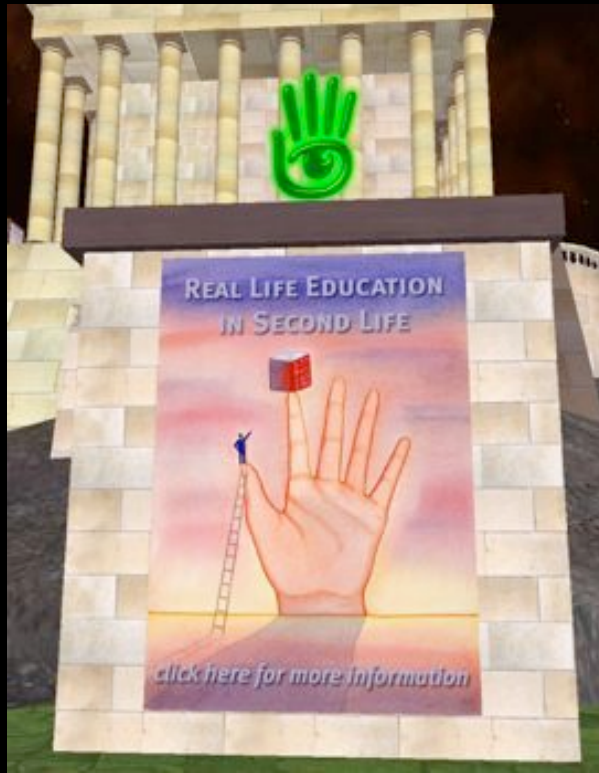
Section 2 - The Representative Assembly Body

Representative seats are chosen by means of the Sainte-Lague method. Borda-count ranked votes cast by citizens. The number of represent

building nemo



knowledge repository



A knowledge clearing house

- Lots of game research happening, but there isn't yet enough understanding of what games, virtual worlds, and user-creation can really offer
- Over 100 researchers and educators already and growing
- Second Life is becoming a de factor clearing house for research

why this is so important

Second Life Community Convention '05

SLCC

Building the Metaverse through Community

NYC: Oct. 8-9

Introduction

Agenda

Registration

Location

Travel

Online

Introduction

Sept. 15 Update: [Peter Ludlow](#) and [Mark Wallace's](#) new book on virtual worlds for O'Reilly Publishing is coming out next year. The [first pre-release excerpts](#) from *Only A Game: Online Worlds and the Virtual Journalist Who Knew Too Much* are available [here free!](#) Mark Wallace will present on this and related material at SLCC.

Come join the early pioneers of the Metaverse (3D World Wide Web) at the Second Life Community Convention (SLCC): the first major offline gathering of [Second Life](#) (SL) users and residents. Through a mixture of demos, conversation and formal presentations, SLCC will explore the state and future of the Second Life platform. Whether you consider yourself an SL resident, casual user, or are interested generally in the fast growing possibilities of virtual worlds, you'll find the SLCC to be an invaluable learning and networking event.

SLCC will be co-located with the State of Play conference on law and virtual worlds at the New York Law School. Consider attending both events for a full weekend of cutting-edge, high-level dialog around virtual worlds and online games.

Agenda

Saturday


- Conference kickoff party


Sunday


- Industry Breakfast
- Moderated panels
- Breakout sessions
- Speakers
- Keynote with Philip Rosedale


[Full Agenda](#)

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 Server Cave
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User creation drives a critical community of

- Practitioners
- Learners and experimenters

A community with a passion for exploration

communities drives identities

And these are identities worth building on, since with games and hacking, the first key activity is exploration of the design space, answering the question:

“what can I do?”



strategizing



And optimization -- what option is “best”?

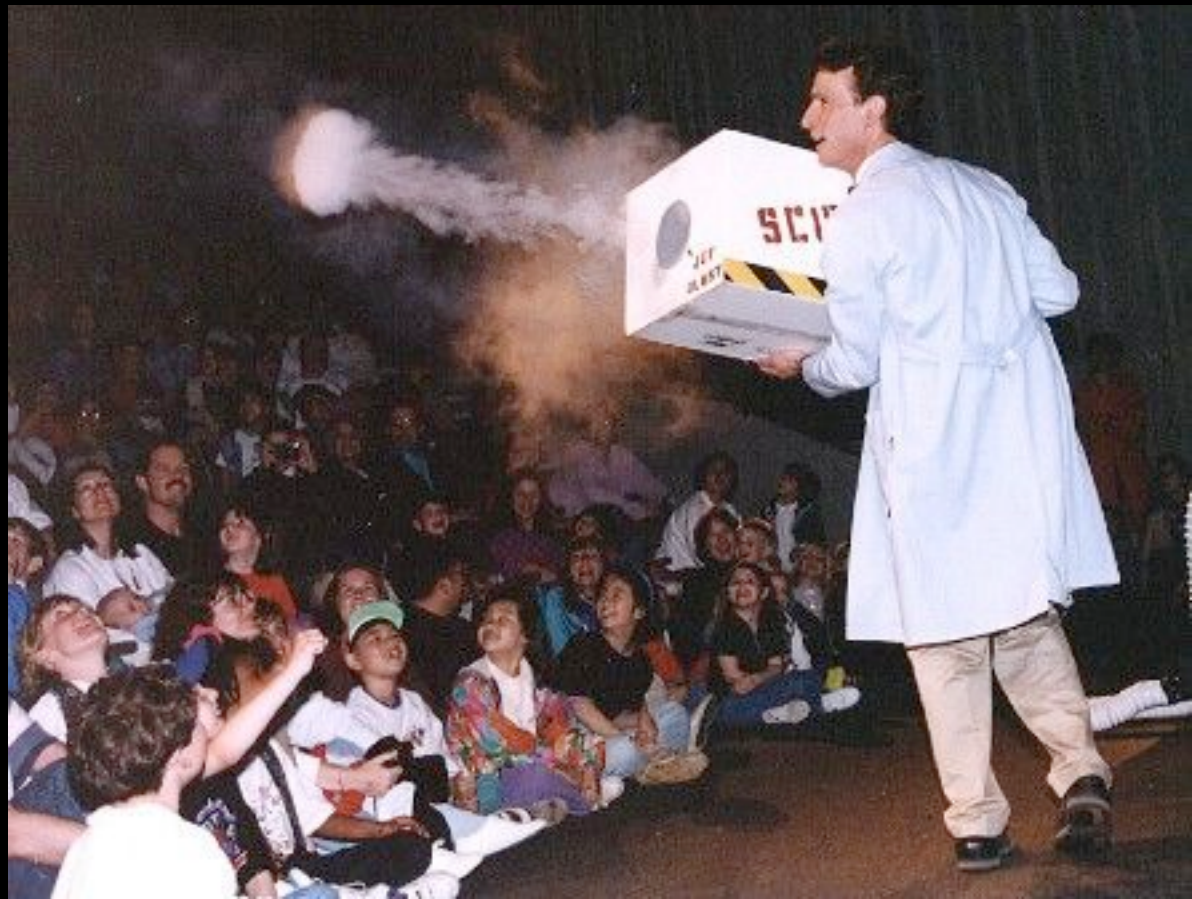
experimentation



Did that idea work? If not, why not?

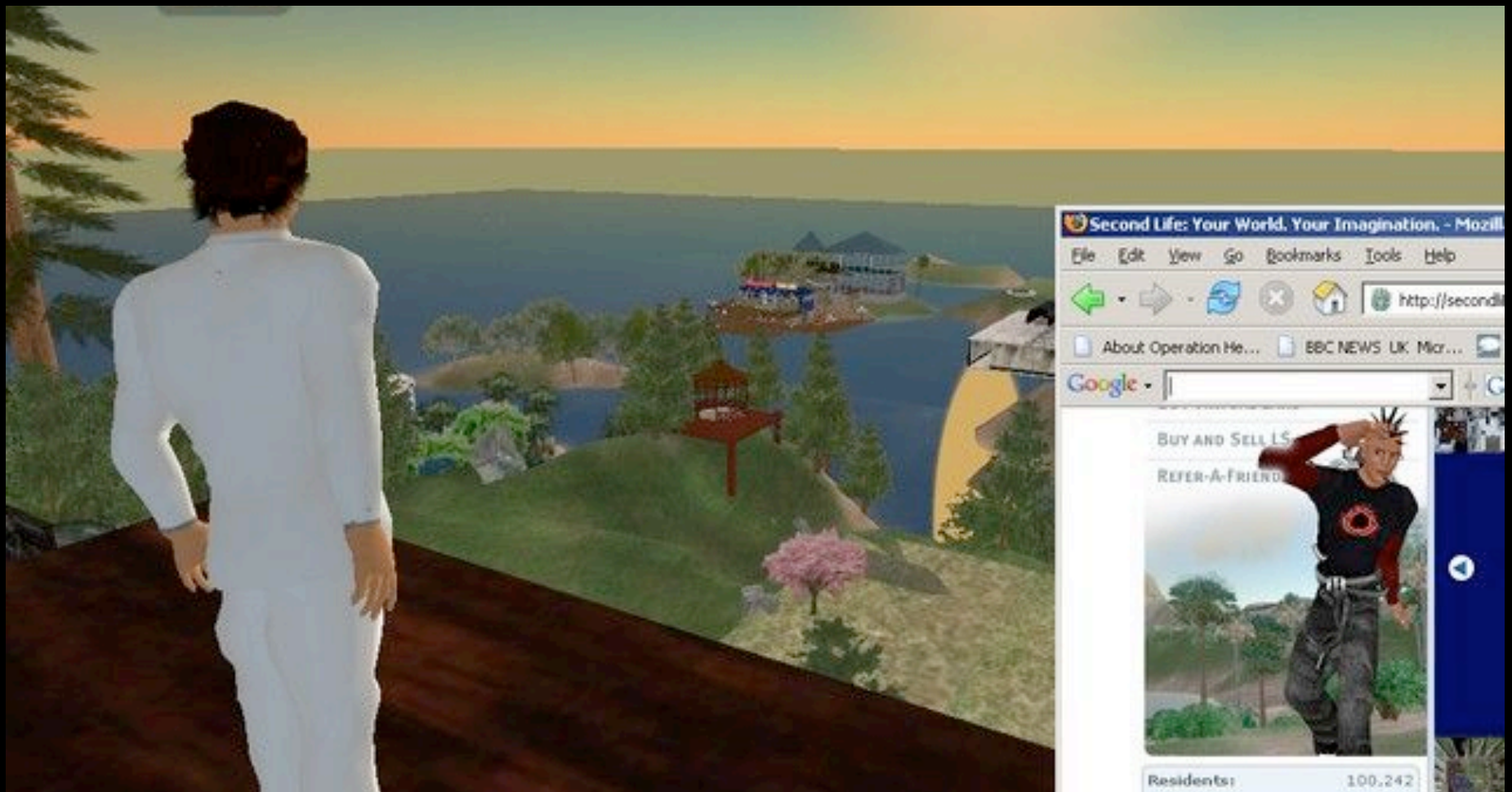
if it smells like science

This exploration leverages both the scientific method of characterization, hypothesis, prediction, and experimentation (rinse and repeat) and the core principles of repeatability, verifiability, and falsifiability



we need this!

In an increasingly technological world, we must embrace communities that allow us to practice science and exploration!



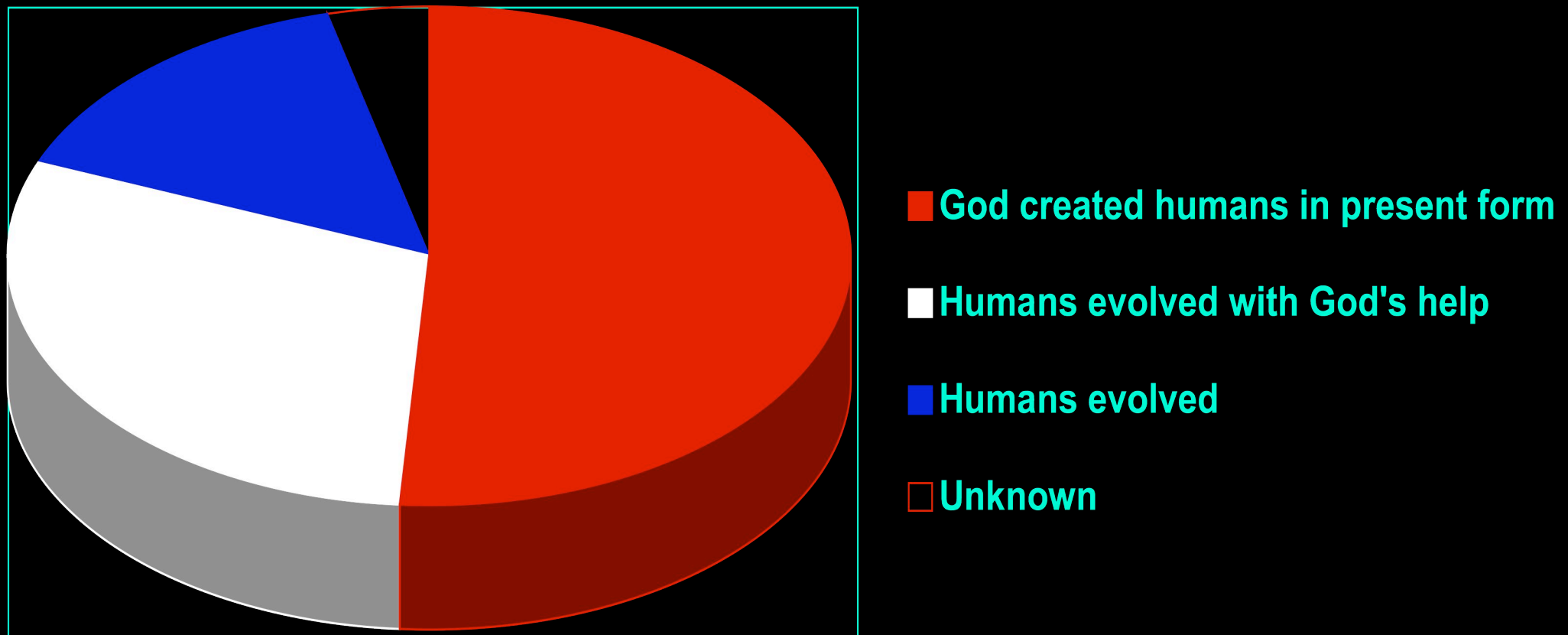
this isn't easy

Practice and peripheral participation
are critical to learning these skills



and when we don't practice . . .

CBS News Poll 23 October 2005 “Views of Evolution/Creationism”



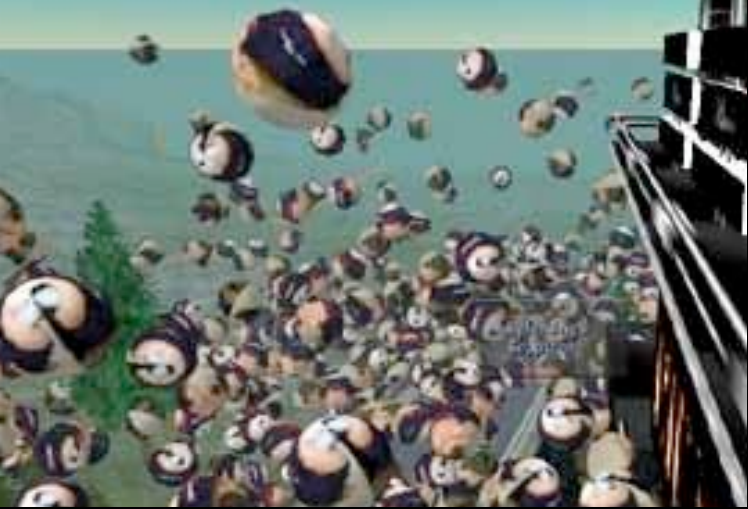
so we need to practice!



Which is why hacking matters!

(Even when it isn't easy to embrace)

enabling behavior



The perils of combining

- Thousands of machines
- Full user scripting
- Physical simulation



the traditional response

Cool feature
that enables
naughty
behavior



the traditional response (cont)

Company nerfing cool feature

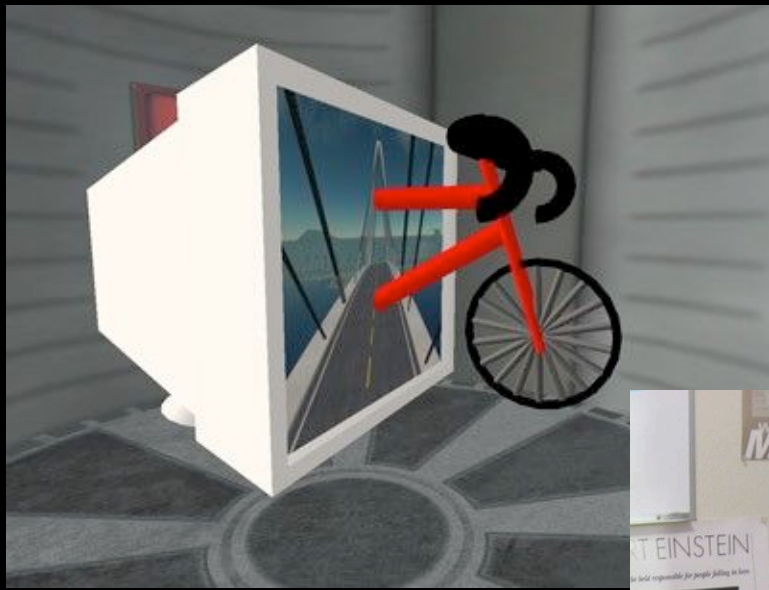




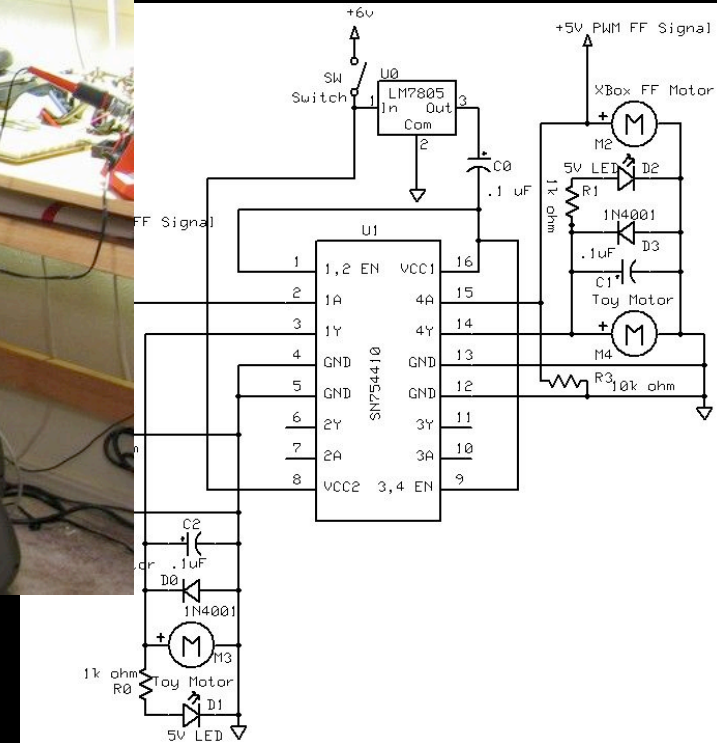
the wrong answer

Much like DRM, removing the ability to hack the world is not the right direction!

- Local control
- Social options
- Legal options

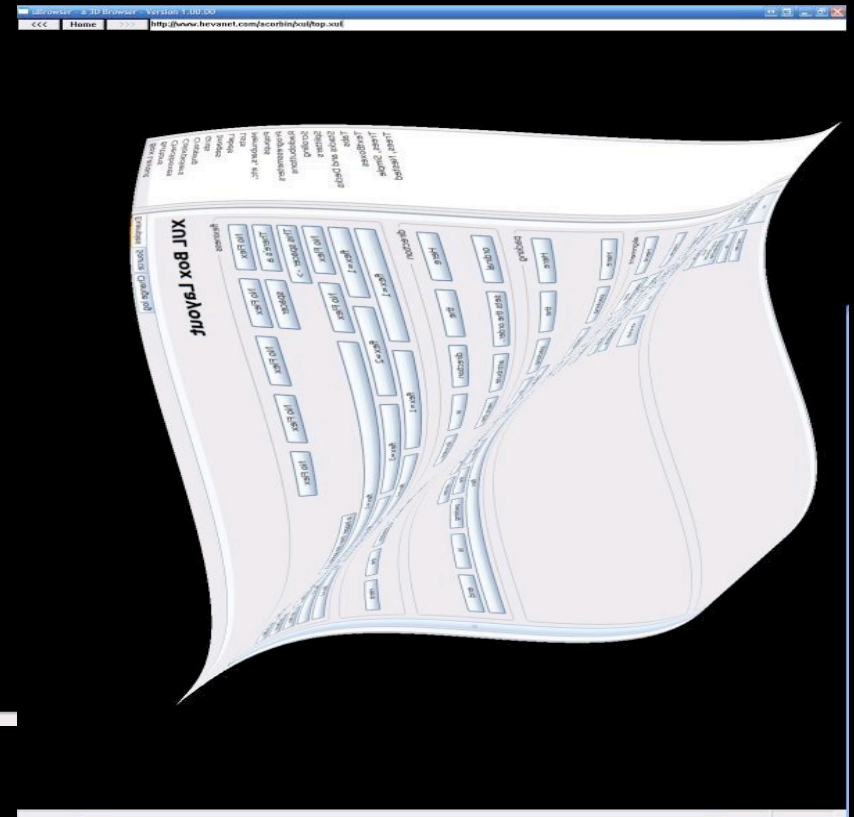


embracing exploration



Work with the amateurs, not against them

what we're doing next



Releasing OpenGL browser based on Firefox back to open source community in the next several weeks, integration into Second Life to follow.

(Email cory@secondlife.com if you want to hear about it)

and then . . .

- Currently replacing our bytecode execution engine with Mono, will begin public testing in Q1 2006.
- Client already available on OS X and Windows, will be starting alpha testing of Linux client in Q1 2006 (email cory@secondlife.com if you'd like to help)
- Starting in Q2 2006, SL will begin switching from proprietary communication protocols to open/public protocols. Instant Messaging will be the first system revamped.

welcome to the future



What happens when the only limit is creativity?

You're going to be the ones to answer!

where to go for more

- **Second Life**

<http://secondlife.com/>

- **Terra Nova**

<http://terranova.blogs.com>

- **New World Notes**

<http://secondlife.blogs.com>

stop talking now

Any questions?