



Choice between investments

A virtual world experiment

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What is Second Life

- Second Life is a 3-D virtual world, which operates with some resemblance to real world appearance and laws of physics, largely created by its Residents.
- **Population**
 - Residents Logged-In During Last 14 Days 634,080
 - Residents Logged-In During Last 30 Days 855,192
 - Residents Logged-In During Last 60 Days 1,215,550
 - Total Residents 14,419,462
- **Estimated In-World Business (not including money paid to Linden)**
- **In 2008, in a month,**
 - approx 60,000 unique users spend \$ on SL.
 - approx half of these spend under \$10,
 - Approx a fifth spend over \$100.

Pros and Cons of Second Life Studies

Why not study it	Why study it
Far from reality Loss of control Some R-rated behavior	It is reality! Field-like conditions Some R-rated behavior
Not a lot of naturally occurring supply chains	Communication, Coordination Markets Investments organizational & team behavior (Sun) Contracts Trust and social distance



Places of interest to OM researchers

- Business Schools
- Academic research labs
- Actual firms and company labs
- Markets

Ancapistan Capital Exchange

THE ACE OF SL STOCK EXCHANGES

CORP	BID	ASK	LAST	%CHG	P/E	PEQ	DIV	YTD
ACE	8.43	8.54	8.59					
BDVR	2.33	3.18	2.98					
BNT	8.25	8.70	8.89					
BNTFRE	0.27	8.88	8.88					
ESN	8.16	8.44	8.58					
FED	2.12	4.88	4.88					
KAU	8.62	8.70	8.62					
MAI	8.25	8.35	8.38					
MBC	2.58	3.35	3.38					
OIO	1.45	2.22	2.22					

Eman Market

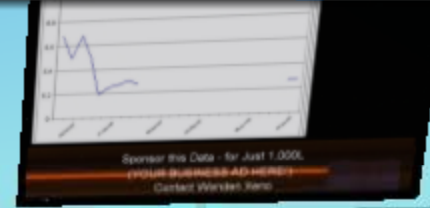
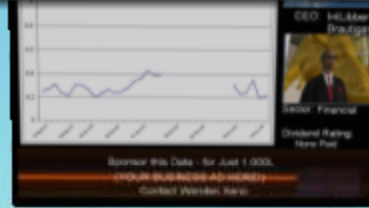


M: Cliff Eclipse: Hey ERnan, Welcome to ACE. If I can be of assistance please let me know.

Received

Local Chat

Communicate



Advertis
3000/m
Co

ACE Trader
Eman Market



Received

Local Chat

Say Gestures

Communicate Stop Flying Snapshot Search Build Mini-Map Map Inventory

Meet professors, the advisor, the GMBA staff, and fellow students.



Comments or suggestions? Please leave us a note!
- Click on the bulletin board
- Type in your message
- Click the Day button

ACE Trader
Ernan Market



Message Received

Local Chat

Say

Gestures

Communicate

Fly

Snapshot

Search

Build

Mini-Map

Map

Inventory



IM Received



Stand Up

Local Chat

[Empty chat input field]

Say

Gestures



INSEAD LABORATORY

ENTRY

- BY TOUCHING ONE OF THE NUMBERS YOU WILL GAIN THE CONSENT
FORWARD TO THE NUMBER OF YOUR CHOICE
- ①
 - ②
 - ③
 - ④
 - ⑤
 - ⑥

PLEASE TOUCH NUMBER 1

ACE Trader
Eman Market



Received

Local Chat

Communicate Fly Snapshot Search Build Mini-Map Map Inventory



Large Villas

Medium

Unfurnished
Luxe Villa
2 Bedrooms & Sunroom
104 Prims
32 x 43m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Unfurnished
Grande Villa
2 Bedrooms
146 Prims
33 x 49m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Unfurnished
Parisian Villa
1 Bedroom & Sunroom
149 Prims
32 x 32m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Unfurnished
Tuscan Villa
1 Bedroom
108 Prims
32 x 32m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Unfurnished
Petit Villa
1 Bedroom & Sunroom
101 Prims
16 x 32m Footprint
ModCopyNo Transfer
6,000L
Touch to TP to this Villa

Unfurnished
Primo Villa
1 Bedroom
87 Prims
16 x 32m Footprint
ModCopyNo Transfer
6,000L
Touch to TP to this Villa

Unfurnished
Nouveau Villa
1 Bedroom
87 Prims
16 x 32m Footprint
ModCopyNo Transfer
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Furnished
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149 Prims
32 x 32m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Furnished
Tuscan ACE Trader Eman Market
1 Bedroom
200 Prims
32 x 32m Footprint
ModCopyNo Transfer
12,000L
Touch to TP to this Villa

Furnished
Petit Villa
1 Bedroom & Sunroom
101 Prims
16 x 32m Footprint
ModCopyNo Transfer
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Free!
Villa Footprints
Includes 100+ villa blueprints from the island and 10 year license

Received

Local Chat

Sun Microsystems Regions One and Two



ACE Trader
Ernan Market

Right click the pad and select "Touch" from the Menu and click "Teleport" to Sun Microsystems 2

Right click the pad and select "Touch" from the Menu and click "Teleport" to Sun Microsystems 3 (SM Employees Only)



Local Chat Say Gestures

Communicate Fly Snapshot Search Build Mini-Map Map Inventory

Questions on Virtual Face-to-face communication

Lab vs. Field Studies in Virtual
Worlds

(Lab and Field Experiments)

(Marina Fiedler, Ernan Haruvy)

Cost and Benefit of Ingroup
Interaction in Virtual Environment
Investment Games

(Field Experiments)

(Marina Fiedler, Ernan Haruvy and
Sherry Xin Li)

Communication and
Asset Bubbles

(Field Experiments)

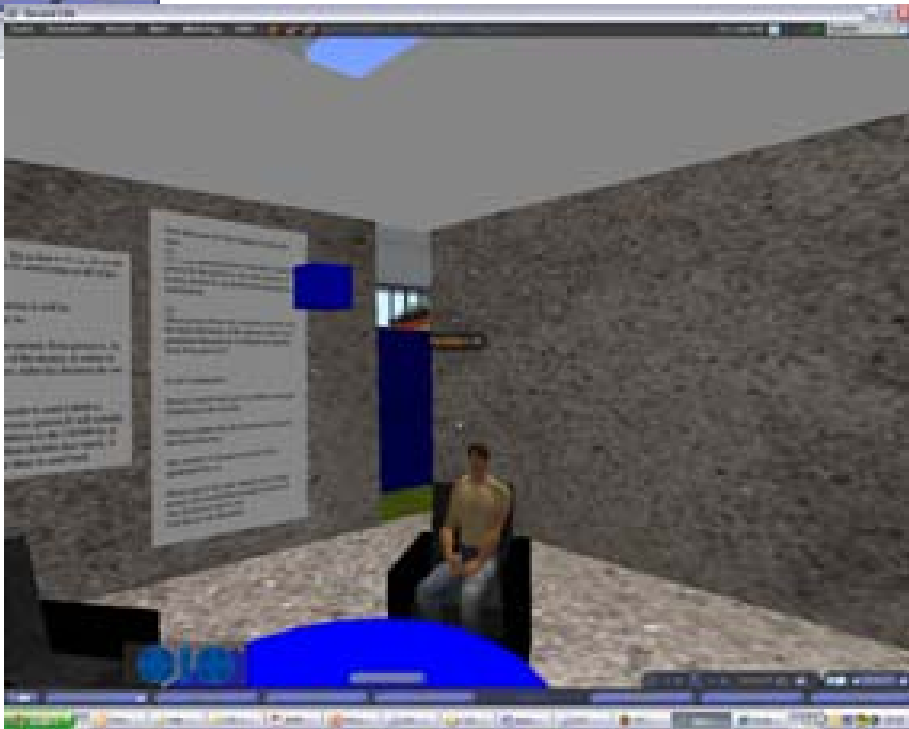
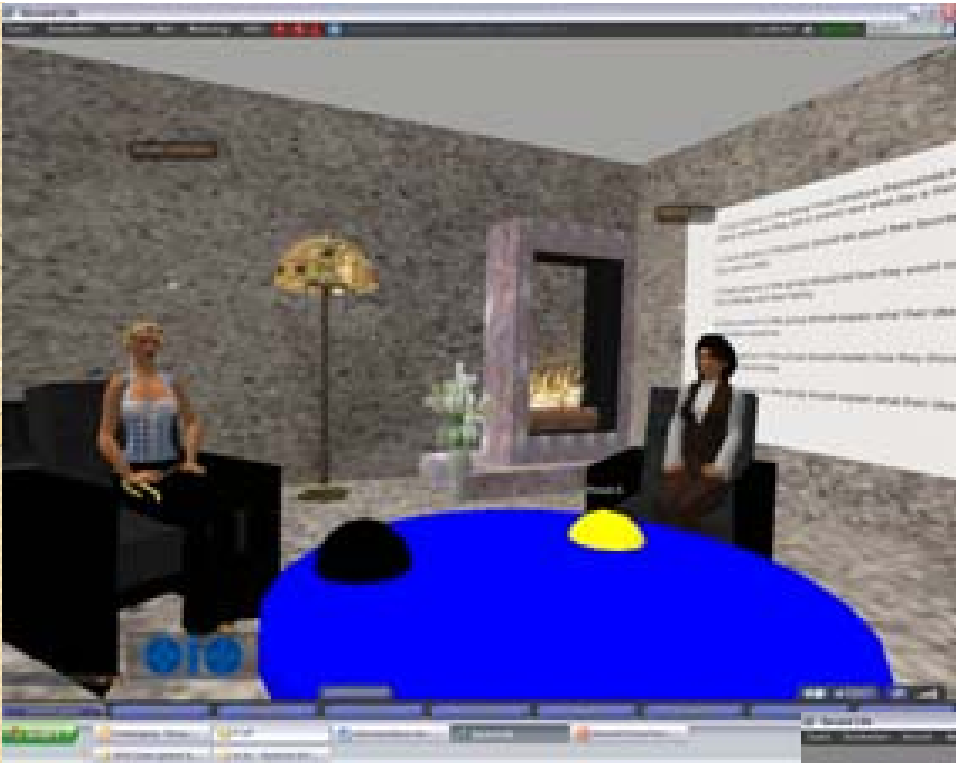
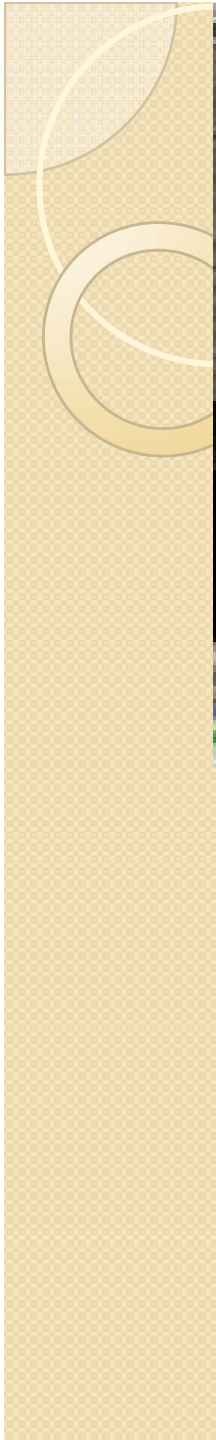
(Marina Fiedler, Ernan Haruvy)

Research Question: How does social distance affect actions as well as the endogenous choice of games to play?

- What is the investment value of social distance?
- How much potential Return on Investment are people willing to sacrifice when they have a choice?
- Often there is a trade off between low social distance and potential Return on Investment
- How does Reciprocity change with the choice they have?
- Choice between Investments is typical of many economic settings:
 - International trade, international alliances and lack of trust
 - Principal-agent interactions with trust
 - Race, gender & nationality ceilings

Experimental Set up

- 3 participants: Proposer (Person A), Responder Ingroup (Person B), Responder Outgroup (Person C)
- 10 minute irrelevant cheap talk
- Instructions: Trust game with different responders, 1000 L\$ endowment for everyone (no guilt)
- Proposer decides whether to play Trust Game with Ingroup Responder or Outgroup Responder
- Proposer sends money to chosen responder
- Ingroup responder has lower multiplier (2) vs 3 or 4 for outgroup
- Ingroup responder, if given choice, returns some amount to proposer
- Outgroup responder, if given choice, returns some amount to proposer.
- **The outgroup responder return amount is then also given to proposer (effectively doubling the social multiplier).**
- Controls for these same multipliers





1) Each person in the group must introduce themselves, what year they are in school, and what day they were a child.

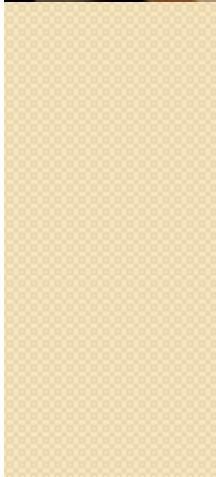
2) Each person in the group should tell about their birthday when they were a child.

3) Each person in the group should tell how they would normally celebrate their birthday with their family.

4) Each person in the group should explain what their ideal birthday celebration would be.

5) Each person in the group should explain how they choose a birthday gift for someone else.

6) Each person in the group should explain what their ideal birthday looks like.



The experimental conditions

Treatments	Number of Players	Chat	Choice of Responder	Multiplier(s)	Number of Sessions
<i>Control 3</i>	2	No	No	3	31 pairs
<i>Control 4</i>	2	No	No	4	31 pairs
<i>Selection 2-3</i>	3	Yes	Yes	Ingroup: 2 Outgroup: 3	69 triplets
<i>Selection 2-4</i>	3	Yes	Yes	Ingroup: 2 Outgroup: 4	69 triplets



Demographics

In total, 538 Second Life subjects participated in 207 sessions including 138 treatment sessions and 62 control sessions.

Of these participants 43.6% were reported as male

The average age was 33.2 with standard deviation 11.1.

33% were reported to come from the United States, 37% from Europe, and 30% from other places, including Australia, New Zealand, Canada, Mexico, South America, and the Middle East.

Summary statistics

reatments	Number of Cohorts	# Proposers Choosing Ingroup / Outgroup	Sent to Ingroup (LD)	Sent to Outgroup (LD)	Returned by Ingroup Responder	Returned by Outgroup Responder
<i>Selection 2-3</i>	69	44 / 25	710	708	42%	31%
<i>Selection 2-4</i>	69	38 / 31	582	650	40%	32%
<i>Control 3</i>	31	n. a.	n. a.	534	n. a.	23%
<i>Control 4</i>	31	n. a.	n. a.	757	n. a.	37%

Selected quotes from proposers on why they selected ingroup or outgroup

Choosing ingroup responder

1. As person B and I spoke and had become *familiar*, I figured that due to this *connection* it was more likely she would return money.
2. The fact that person B had *communicated* with me meant they were *less anonymous* and therefore more '*trustworthy*'
3. Because I felt a *connection* with her.
4. I had established a *rapport* with Person B. Person C is an *unknown* quantity, he may choose not to give anything back. Person B might not either, however at least I've had a chance to get to *know* him. I have a better idea of whether he would or not.
5. I have somebody *in front of* me. I feel better *seeing* the person. I know it's virtual and I don't know him/her, but the decision was easier for me.

Choosing outgroup responder

1. The money is *tripled* and I'm hoping he'll be generous, instead of just *doubled* with B, and I don't know either person very well.
2. It has the most *potential* based on the *multiplier* so I took the risk.
3. Best chance of making *greater return*.
4. The possibility of a *higher return* for myself and Person B.
5. It was *better for the group*. I think it was worth the risk.
6. I'm looking for a *win/win* situation, with this decision I'm hoping that C will decided to return the money for a *win/win* situation also.
7. So *all of us can win*, not only two of us.
8. There will be *more money available to share* among the players.
9. I like to give my money to the people I don't know so if something happens I don't know him. I don't like to get money stuff with persons that I know because it causes trouble.

* In the experiment, person B and C refer to the ingroup and outgroup responder, respectively. Key words are italicized for the convenience of readers. They were not in italics in participants' response in the questionnaire.

Payoff Summary

Treatments	Matching	Proposer	Average payoffs (LD)		Joint Payoffs (LD)
			Ingroup responder	Outgroup responder	
<i>Selection 2-3</i>	Outgroup	1299	2007	2117	5423
<i>Selection 2-3</i>	Ingroup	1352	1358	1000	3710
<i>Selection 2-4</i>	Outgroup	1523	2173	2427	6123
<i>Selection 2-4</i>	Ingroup	1344	1238	1000	3582

Determinants of proposers' partner selection

	(1)	(2)
Data	Selection only	Selection only
Experiment variables	yes	yes
Demographics		yes
Multiplier 4	-0.362 (0.348)	-0.378 (0.371)
Proposer gender (male)		-0.471 (0.377)
Proposer age		-0.044*** (0.017)
Constant	0.565** (0.251)	2.303*** (0.678)
Pseudo R ²	0.006	0.053
Observations	138	132

Standard errors in parentheses.

* significant at 10% level; ** significant at 5% level; *** significant at 1% level.



Result 1

Proposers' partner selection

Proposers are more likely to choose ingroup responder than outgroup responder. The ingroup favoritism doesn't decrease significantly as the rate of investment return with the outgroup responder increases from 3 to 4.

Table 6: Determinants of proposers' amount sent

	(1)	(2)	(3)	(4)
Data	Selection only	Selection only	Selection + control	Selection + control
Experiment variables	yes	yes	yes	yes
Demographics		yes		yes
Ingroup	2.2 (67.4)	-8.1 (66.3)	176.4*** (65.7)	159.8** (67.2)
Outgroup			174.2** (75.3)	153.4** (77.5)
Multiplier 4	-58.0 (72.3)	-50.2 (70.9)	223.4*** (71.1)	229.4*** (73.0)
Ingroup* Multiplier 4	-70.6 (93.7)	-29.7 (92.1)	-352.1*** (94.4)	-312.0*** (94.9)
Outgroup* Multiplier 4			-281.5*** (103.6)	-262.1*** (105.3)
Proposer gender (male)		-39.4 (42.4)		14.4 (38.3)
Proposer age		6.3*** (2.2)		7.2*** (1.8)
Constant	708.0*** (53.8)	509.5*** (101.2)	533.8*** (50.3)	283.0*** (78.038)
R ²	0.040	0.097	0.072	0.150
Observations	138	135	200	192

Standard errors in parentheses.

* significant at 10% level; ** significant at 5% level; *** significant at 1% level.



Result 2

Proposers' investment amount

- *Proposers invest about the same amount in ingroup responders as in outgroup responders.*
-

Table 7: Determinants of proportion returned by responders

	(1)	(2)	(3)	(4)
Data	Selection only	Selection only	Selection + control	Selection + control
Experiment variables	yes	Yes	yes	yes
Demographics		Yes		yes
Ingroup	0.115 ** (0.049)	0.124** (0.051)	0.157 *** (0.047)	0.19 *** (0.049)
Outgroup			0.042 (0.054)	0.065 (0.056)
Amount invested	0.024 ***	0.027***	0.023 ***	0.025 ***
(LD 100)	(0.006)	(0.006)	(0.005)	(0.005)
Multiplier 4	0.026 (0.053)	0.004 (0.054)	0.088 * (0.052)	0.11 ** (0.053)
Ingroup*Multiplier 4	-0.019 (0.068)	-0.001 (0.070)	-0.083 (0.069)	-0.107 (0.07)
Outgroup*Multiplier 4			-0.063 (0.075)	-0.106 (0.076)
Responder gender (Male)		-0.001 (0.035)		-0.026 (0.029)
Responder age		0.003** (0.002)		0.004 *** (0.001)
Constant	0.136 ** (0.059)	0.019 (0.086)	0.104 ** (0.045)	-0.046 (0.065)
Adjusted R2	0.152	0.196	0.182	0.248
Observations	138	132	200	189

Standard errors in parentheses.

* significant at 10% level; ** significant at 5% level; *** significant at 1% level.



Result 3 (Responders' reciprocity).

- *Ingroup responders return significantly higher proportion of LDs than outgroup responders and responders in control.*
- *Proportion returned increases with the amount invested by the proposer.*
- *Outgroup responders return the same proportion in the selection treatment as those responders in the control.*

Conclusions

- By allowing a proposer to choose between two investment responders—one with whom the proposer is familiar and the other completely anonymous—we are able to gauge the strength and importance of social distance in investment decisions.
- Proposers prefer ingroup responders A LOT (even in 2-4)
- Partner selection not very sensitive to multiplier difference
- Amount sent not very sensitive to ingroup/outgroup
- Proportion returned sensitive to ingroup/outgroup and to amount sent
- The decision by proposers to go with ingroup responders was likely at least partially based on expectations.
- Ingroup responders unambiguously returned a greater proportion in every condition, but this was not enough in *Selection 2-4* to offset the higher outgroup multiplier
- In *Selection 2-3*, proposers fared better going with the ingroup responders, but not in *Selection 2-4*.
- **Inefficiency:** With an outgroup multiplier of 4, more than twice the ingroup multiplier, proposers did worse for themselves, and much worse for the group, by selecting ingroup responder.