Motivating User Participation in Social Computing Applications

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Outline

• Introduction

• Theories of Motivation and Design Approaches
  – Economics ➔ Markets ➔ I-Help
  – Behavioural Economics ➔ Gamification ➔ Comtella
  – Psychology ➔ Interventions ➔ WiseTales

• Trends
Theories of Motivation: Economics

• People are utility maximizers
• Create a rewards system and people will follow
  – Designing rules of an auction (game-theory); rational agents have no incentive to deviate from the rules
  – Overall goal: to optimize overall system performance by a number of criteria
  – Rules apply to everyone (no personalization)
Example: I-Help, 1999

Because...

But..
I-Help Economy

Incentive: earning currency by helping others
Price regulates the demand and supply

However, knowledge is an externality
The goal of the system is to max the knowledge...
Challenges

• How much users should know about the mechanism?
  – Should focus on learning, not on making money
  – How to prevent gaming?

• Design of the user interface:
  – What metaphor?
  – How much control over the bargaining?
  – How much knowledge of the rules?

• How to adapt the mechanism at run time?
  – Responding to unpredicted patterns of undesirable behaviour: at micro level (policing) or at macro level (dynamically changing the rules)...
Other systems based on markets

• Micro-payments in P2P systems
  – Invisible for users, cashed automatically for better download speed

• Google Answers (Rafaeli et al., 2008) – help for real $$,
  – closed down in 2006 due to massive abuse

• Yahoo Answers - no currency, but ... Reputation!
Theories of Motivation: Behavioural Economics

• People are irrational (not perfectly selfish) and make decisions under the influence of various factors:
  – Social
  – Emotional
  – Cognitive (limited cognition)

• Example of “irrational behaviours”, e.g.:
  – Striving for fairness / inequity aversion (Fehr, 2001)
  – Reciprocal altruism (Fehr et al, 2003)
  – Focus on “free” (Ariely, 2008)
  – Easily influenced (by expectations, ownership, social norms) (Ariely, 2008)
Gamification of Social Sites

• Practitioner’s guides (e.g. J. Porter at Bokardo.com, O’Reilly – Crumlish & Malone)

• User experience design approach
  – integration of Game Mechanics in non-game environments, to increase audience engagement, loyalty and fun (www.gamification.org)

• A number of patterns, rules and feedback-loops, e.g.
  – Ownership
  – Achievements
  – Status / Reputation
  – Community collaboration and quests
Reputation “economies”

• Theoretical basis:
  – Kollock P., 1999, The Economics of Online Cooperation
  – Raymond, E., 2000, Homesteading the Noosphere

• Difference between Status and Reputation
  – Status can be earned by oneself (e.g. climbing levels in a game),
  – Reputation is earned by recognition from others

• Examples
  – Facebook – number of friends
  – Amazon – reviewer’s reputation by ratings of others
Example: Comtella, 2003

- **Status**: can be earned by contributing more papers.

- **Ownership**: a virtual card, brings privileges
  - Can be lost if the user stops contributing *(Fear)*

- User have to be aware of her achievement: **leader-board** *(social vis)*
  - *Allows social comparison*
Evaluation Results

- Great increase in participation, but temporary
- Gaming

Overall System (Community) Needs:
-- Specific time-pattern of contributions is preferred
-- Quality of contributions is more important than quantity
Comtella: Next Iteration

- **Status** was kept: shown by different colors in the vis.
- **Reputation** was added: shown as brightness
- **Dynamic** and personalized rewards
Evaluation

- Controlled study, 21 students
- Mechanism was very effective in stimulating exactly the desired behaviour
- No over-contributions
- Users in experimental group brought higher-quality papers than the control group
- Users in experimental group brought contributions earlier than in the control group
A Critical View of Gamification

- Influential bloggers (McDonald, Radia):
  - Ubiquitous points gathering will turn away the most creative elite users, who are most valuable for any community of social app.
  - Need to develop different types of games, that would foster a sense of achievement (self-efficacy), work along the intrinsic motivations of users rather than replacing them with points and badges....
  - Turning back to fundamental questions of what motivates people...
Theories of Motivation: Psychology

• There are far too many...

General theories:

Self-determination theory (competence, autonomy, relatedness) (Deci & Ryan)
Theory of Planned behavior (Ajzen, 1985)

Needs-based theories:
Maslow’s hierarchy
Alderfer’s ERG theory
Acquired needs theory
Self-efficacy (Bandura)
Goal setting theory (Latham & Locke)

Social, Intrinsic, Extrinsic:
Cognitive Dissonance (Festinger)
Two-factor theory (Herzberg)
Equity theory

Rewards-based:
Reinforcement theory (Skinner)
Expectancy theory

Intrinsic  Social  Extrinsic
Example: Cognitive Dissonance Th.

- Social Comparison (Festinger, 1957):
  people tend to compare themselves with others, who they perceive as similar to them, in order to evaluate or enhance some aspects of the self
  - Assimilation – serves self-enhancement if comparing to a superior peer (role model)
  - Contrast – protects subjective well-being (also self-enhancement) if comparing with an inferior peer

- Explains motivational effect of leader-board patterns, e.g. Comtella visualization
Example: Reciprocation theory

- People tend to return favours ... (Fehr et al, 2002)
Social Visualizations for Reciprocation

Comtella-D: Webster & Vassileva, 2006

Flower-Vis: Raghavun & Vassileva, 2010
Evaluation

• Comtella-D: it worked...
  – In controlled study, peripheral users became more connected to the core, and users in the core got involved in more reciprocal relationships;
  – however users didn’t acknowledge motivational effect in the questionnaire

• FlowerVis: it didn’t work
  – Three control studies showed no motivational effect
  – Very small studies, hard to attract participants...
Theories of Motivation: Common Identity and Common Bond

• The *common identity theory* makes predictions about the causes and consequences of people’s attachment to the group as a whole.

• The *common bond theory* makes predictions about the causes and consequences of people’s attachment to individual group members.
Recommendations for Design

• (Kraut, Ren, Kiesler, 2007): “Identity-based communities should have clear mission statements and policies to keep conversation on topic, can tolerate anonymity and large numbers of participants, and can conduct all communication in public forums.

• Bond-based communities should phrase their mission statements to encourage members to engage in and to tolerate conversations on wide-ranging topics, and would improve if the numbers of participants were limited, and if they had mechanisms for private communication and identifying members”
Are female bosses harsher on women than male bosses?
Submitted by Brooke on Wed, 07/19/2009 - 12:49. female boss male boss relationships

I don't remember what it exactly, but a recent conversation with an old friend reminded me of my first boss, incidentally a female. She was an engineer who owned a consulting company. I worked with her for 5 years.

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How to break into male networks?
Submitted by Brooke on Mon, 07/13/2009 - 22:46. boys club relationships work environment

Hello WISETalers!

I just came across this article, and thought it might be interesting for you as it was for me.

It is by Joe Miller, the CEO of Women's Leadership CoachingTM Inc., which offers women's leadership seminars and coaching programs. (By the way, if you will be attending the Grace Hopper Celebration this September in Tucson, AZ, she will have a special session there).

- Add new comment Read more

stress at graduate school
Submitted by sam on Tue, 06/30/2009 - 13:30. graduate experience stress

In my Masters I felt that I was unprepared to handle a research. I found it very frustrating not knowing how to start my research. Do I start by reading the literature and write the background section of my thesis or do I start by trying to get information out of the data I have.

- 1 comment 1 new comment Read more

Cows, sheep, piggies and me
Submitted by peaches on Tue, 06/30/2009 - 01:18. animal science choosing area of study fathers-daughters

Being in a final year of my BSc program in Animal Science, I don't get to write a lot of personal stories, I am
Evaluation

• It didn’t work
  – Users understood the visualization, but stated that they won’t be motivated to contribute more of the kind of stories that are needed by the community
  – Several users indicated preference for earning reputation by collecting ratings by others
  – Several users indicated that they would be motivated more by the comments of other users (seeking common bond?)
Lessons Learned

• It is much harder to design successful mechanisms based on intrinsic / gentle approaches
• Individual differences in motivation play a bigger role
  → Need for individual interventions (e.g. personal messages, Harper et al, 2007)
  → More place for user modeling and personalization
  → The environment can look differently for different users, and still they participate in the same community, or play the same game...
Future Trends

• Combining Different Incentive Mechanisms in One System and Personalization
• Adaptive Incentive Mechanisms
• Blurring the Boundary Between Real and Virtual:
  – Mechanism Design and Persuasion
• Important Application Area:
  – Self-Directed Learning
More information

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