Peer production: Coordination and motivation

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Peer production
Sharing
Interacting
CIA torture appears to have broken spy agency rule on human experimentation (theguardian.com)

Just a casual day at the prison. (liveleak.com)

What a burning basilica looks like (imgur.com)

TIL that, with the exception of 2004, the Nickelodeon specials "Kids Pick the President" have correctly predicted the winner of every U.S. presidential election since 1988. (en.wikipedia.org)

I made a GIF of Steph Curry going Super Saiyan in Game 4 of the NBA Finals (x-post from /R/Warriors) (i.imgur.com)

Bill Gates and I have a combined fortune of around 80 billions of dollars. (self.Showerthoughts)
Here's how it works:

- Anybody can ask a question
- Anybody can answer
- The best answers are voted up and rise to the top
Collaborating
Create stories, games, and animations
Share with others around the world

A creative learning community with 9,824,687 projects shared

Featured Projects

Carpool – a short story
by star-kwafie

Random Island Gener...
by Quantan

Tacos Vs Fajitas
by chooper100

Flash 1.0
The Fastest
Smoothest Camera

Quinary Quality
by So_Awesome

Featured Studios

Flat & Graphic Design

PASTEL

APIS

Research questions

- Who are “the crowd”?
  - Demographics?
  - Skills?
- Why do they contribute (i.e., what are their motivations)?
- How to manage distributed collaboration?
  - Managing unreliable contributors
  - Work practices that span boundaries
Coordination of peer production
Coordinaton theory
Coordination theory

- Coordination defined as managing dependencies

Task
Actor or resource
Task using or creating a resource

Shared Output Resource

Producer Consumer

Shared Input Resource
Coordination mechanisms

- Dependencies constrain how tasks can be performed, requiring additional effort, i.e., coordination mechanisms

- Task-resource: Pick a resource to do a task or a task for a person to do

- Shared input: Decide which task gets the resource first (or at all, for consumable resources)

- Shared output: Ensure that outputs are compatible or eliminate redundant tasks
Coordination models

Sharing

Shared output dependency

Interacting

Collaborating

Usability dependency
Citizen science
Welcome to eBird

Birding’s cutting edge!

eBird News and Features

What will happen with Ivory Gull this winter?
November 08, 2010

Last January, we published a discussion of recent trends in Ivory Gull that may be early signs of real ecological havoc being wreaked in the species' home range: more vagrancy of adults far to the south of their home range. On 4 Nov 2010 eBirders added one more data point: an adult Ivory Gull at Pismo Beach, California. Below we republish our analysis from last winter with a link to a disturbing video of the Ivory among barefoot beachgoers.

200 Countries, 8665 Species, and Counting!
October 29, 2010
Submit Observations

Step 1: Where did you bird?

Identify the location where you made your observations.

» Find it on a Map <NEW>
Select existing personal locations and hotspots, or plot a new location.

» Use Latitude/Longitude
Create a new location using latitude and longitude. First check using "Find it on a Map" to make sure that this location doesn’t already exist.

» Select an entire city, county, or state
If you were birding over a very large area (entire state or county or city) select this option. Please consider using more precise locations so that your observations are more valuable for analysis.

» Import Data <NEW>
Import data from a spreadsheet, database or birding program. Learn how
View and Explore Data

**Gulf Spill Bird Tracker**
Interactive map of current and forecast spill areas with recent sightings of target species.

**Global Range Maps**
Explore interactive range maps for any species around the world.

**Top 100**
Top 100 eBirders in a region — by species or complete checklists

**Arrivals and Departures**
Arrivals and departures for a country, state/province, county, or hotspot

**All-Time First / Last Records**
All-time records for species arrival and departure in a region

**High Counts**
Species high counts for a region

**Alerts**
Reports and email alerts for rarities and species you haven't seen

**Summary Tables**
Observations summarized by week, month, region, species, and more.
Coordination model

Usability dependency

Ornithological research

Bird sightings

Bird watching

Birders
Welcome to Galaxy Zoo's view of the Universe. If you're here you should already have seen the Tutorial, but feel free to go and remind yourself. There's no need to agonise for too long over any one image, just make your best guess in each case.
Galaxy Zoo: Disentangling the Environmental Dependence of Morphology and Colour

Ramin A. Skibba$^1$, Steven P. Bamford$^{2,3}$, Robert C. Nichol$^2$, Chris J. Lintott$^4$, Dan Andreescu$^5$, Edward M. Edmondson$^2$, Phil Murray$^6$, M. Jordan Raddick$^7$, Kevin Schawinski$^8$, Anže Slosar$^9$, Alexander S. Szalay$^7$, Daniel Thomas$^2$, Jan Vandenberg$^7$

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$^9$Berkeley Center for Cosmo. Physics, Lawrence Berkeley National Lab. & Physics Dept., Univ. of California, Berkeley CA 94720, USA

31 December 2013

ABSTRACT
We analyze the environmental dependence of galaxy morphology and colour with two-point clustering statistics, using data from the Galaxy Zoo, the largest sample of visually classified morphologies yet compiled, extracted from the Sloan Digital Sky Survey. We present two-point correlation functions of spiral and early-type galaxies, and we quantify the correlation between morphology and environment with marked correlation functions. These yield clear and precise environmental trends across a wide
Coordination model

Usability dependency

Astronomical research

Galaxy classifications

Galaxy classification

Zooites
Get Started! Drag bad photos to the choices below to swap them. When all the photos look good, click "play" to start! 

- Not a Moth: Drag a photo to this space if it is not a picture of a Moth.
- Trash: Drag a photo to this space if it is too light, too dark, or too blurry to use.

Play
What is the **Shape at Rest**? 🎧

Drag the photos onto the spaces below to answer. Click the question marks for help.
What is the **Forewing Distinctive Color**?

Drag the photos onto the spaces below to answer. Click the question marks for help.
You found a Happy Moth!
You classified this image correctly! Now, which choice below does it look most like?
Points Earned

Happy Moth #1 | Happy Moth #2

Lambdina pellucidaria

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct Answer</th>
<th>Your Answer</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1: What is the Shape at Rest?</td>
<td>Arrow</td>
<td>Arrow</td>
<td>10</td>
</tr>
<tr>
<td>R2: What is the Forewing Main Color?</td>
<td>Gray</td>
<td>Gray</td>
<td>10</td>
</tr>
<tr>
<td>R3: What is the Forewing Distinctive Color?</td>
<td>None</td>
<td>None</td>
<td>10</td>
</tr>
<tr>
<td>R4: What is the Forewing Pattern?</td>
<td>Banded</td>
<td>Banded</td>
<td>10</td>
</tr>
</tbody>
</table>

Total Points: **80**

Play Again!

Happy Moth #1

Lambdina pellucidaria

Collected
Nice Work
+10 pt

There were 2 Happy Moths in this game.
- You classified 1 of 2 correctly.
- You collected 1 Happy Moth.
FORGOTTEN ISLAND!
A Citizen Science Adventure
Crystal structure of a monomeric retroviral protease solved by protein folding game players

Firas Khatib¹, Frank DiMaio¹, Foldit Contenders Group, Foldit Void Crushers Group, Seth Cooper², Maciej Kazmierczyk³, Miroslaw Gilski3,4, Szymon Krzywd³, Helena Zabranska5, Iva Pichová5, James Thompson¹, Zoran Popović², Mariusz Jaskolski3,4 & David Baker¹,6

Following the failure of a wide range of attempts to solve the crystal structure of M-PMV retroviral protease by molecular replacement, we challenged players of the protein folding game Foldit to produce accurate models of the protein. Remarkably, Foldit players were able to generate models of sufficient quality for successful molecular replacement and subsequent structure determination. The refined structure provides new insights for the design of antiretroviral drugs.

Foldit is a multiplayer online game that enlists players worldwide to solve difficult protein-structure prediction problems. Foldit players leverage human three-dimensional problem-solving skills to interact with protein structures using direct manipulation tools and algorithms to compute energy minimizations. The success of Foldit players in solving the structure of the M-PMV retroviral protease highlights the potential of this approach for structure determination.

Structure Prediction (CASP) experiment was an ideal venue in which to test this. CASP is a biennial experiment in protein structure prediction methods in which the amino acid sequences of structures that are close to being experimentally determined—referred to as CASP targets—are posted to allow groups from around the world to predict the native structure (http://predictioncenter.org/casp9/). Each group taking part in CASP is allowed to submit five different predictions for each sequence. Foldit participated as an independent group during CASP9 and made predictions for the targets with fewer than 165 residues that the CASP organizers did not indicate as oligomeric. For targets with homologs of known structure—the Template-Based Modeling category—Foldit players were given different alignments to templates predicted by the HHpred server⁵ via the new Alignment Tool. Despite these new additions to the game, the performance of Foldit players over all CASP9 Template-Based Modeling targets was not as good as those of the best-performing methods, which made better use of information from homologous structures; extensive energy minimization used by Foldit players tended to perturb peripheral portions of the chain away from the conformations present in homologs.

For prediction problems for which there were no identifiable homologous protein structures—the CASP9 Free Modeling category—Foldit players were given the five Rosetta Server CASP9 submissions (which were publicly available to other prediction groups) as starting points, along with the Alignment Tool. Here all five starting models were perturbed through human player efforts to produce new conformations that might not have been generated by other methods. These efforts were sufficient to improve the Foldit predictions, demonstrating the potential of Foldit for structure prediction.

The crystal structure of the M-PMV retroviral protease solved by Foldit players provides a new benchmark for the protein folding game approach and highlights the potential of Foldit for structure determination beyond the CASP targets.
**Puzzles**

**Current**

**1064b: De-novo Freestyle 49: Round 2**

Top Group: Go Science  
Top Player: pauldunn  
Top Score: 9,310  
Categories: Overall, Prediction

This is Round 2 for Puzzle 1061. You will be able to load in your manual saves from 1061 and use them as a starting point here. This puzzle has been opened up to allow for sharing and the use of all scripts. NOTE: If you did not manually save a solution in puzzle 1061, you can go back to 1061, manually save it, and the solution should appear in your manual saves for this puzzle.

**Beginner Puzzle (<150): Docking Design**

Top Group: Russian team  
Top Player: SIW  
Top Score: 8,958  
Categories: Beginner

We are giving you a helix positioned over a hydrophobic groove where binding occurs in nature. You can mutate any residue on the helix but none on the native binding region. Try to look for favorable hydrophobic interactions in this groove while maintaining the helix. For players with fewer than 150 global points.

**1063: Revisiting Puzzle 63: Spinach Protein**

Top Group: Go Science  
Top Player: gloverd  
Top Score: 9,333  
Categories: Overall, Prediction

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**GET STARTED: DOWNLOAD**

- **Win Beta** (Windows XP/Vista/7/8)
- **Mac Beta** (OSX 10.7 or later)
- **Linux Beta** (64-bit)

- Are you new to Foldit? Click here.
- Are you an educator? Click here.

**SEARCH**

Search box with options:

- Google Search
- Only search fold.it

**RECOMMEND FOLDIT**

Send button

**USER LOGIN**

Username: *  
Password: *  
Log in

- Create new account
- Request new password
Wikipedia
Bienvenue sur Wikipédia
Le projet d'encyclopédie libre que vous pouvez améliorer

Arts — Géographie — Histoire — Sciences — Société — Sport — Technologies
Liste des portails thématiques

🌟 Lumière sur

Les Jeux olympiques d'hiver de 1994, officiellement connus comme les XVIIèmes Jeux olympiques d'hiver, ont lieu à Lillehammer en Norvège du 12 au 27 février 1994. Ce sont les premiers Jeux d'hiver qui ne se déroulent pas la même année que les Jeux d'été. La ville était déjà candidate pour accueillir les Jeux olympiques d'hiver de 1992, finalelement attribués à Albertville. Pour l'organisation de ces Jeux, quatre villes sont en compétition et Lillehammer remporte les suffrages du Comité international olympique (CIO) lors du 3e tour face à la ville suédoise d'Ostersund. C'est là la deuxième fois qu'une ville norvégienne accueille les Jeux d'hiver après Oslo en 1952. La moitié des sites de compétition sont situés à Lillehammer, les autres à proximité immédiate de la ville, suivant l'idée de « Jeux compacts » souhaité par le comité d'organisation.

Ces Jeux d'hiver réunissent 1 739 athlètes issus de 67 nations, qui participent à six sports et 61 épreuves, soit quatre de plus qu'en 1992. Quatre pays font leur entrée aux Jeux d'hiver, Israël, la Bosnie-Herzégovine, les Samoa américaines et Trinité-et-Tobago, tandis qu'une partie des anciennes républiques de l'URSS participent pour la première fois sous leurs propres couleurs, de même que la Slovaquie et la République tchèque.

À l'issue de ces Jeux, la Russie arrive en tête du tableau des médailles avec onze titres olympiques, mais ce sont les athlètes norvégiens qui comptent le plus grand nombre de médailles avec 26 récompenses, dont dix en or. La fondeuse italienne Manuela Di Centa est l'athlète la plus médaillee de ces Jeux ; elle réalise par ailleurs une performance exceptionnelle en montant sur le podium lors de chacune des cinq courses qu'elle a disputées, en remportant notamment deux fois la médaille d'or. La Russe Lyubov Egorova et le Norvégien Bjørn Daehlie, tous les deux spécialistes du ski de fond, comptent chacun quatre médailles. Avec ses trois titres olympiques, Egorova est d'ailleurs l'athlète ayant remporté le plus de médailles d'or lors de ces Jeux, en compagnie du patineur de vitesse norvégien Johann Olav Koss.

*Lire la suite*

Contenu de qualité • Bons contenus • Sélection • Programme

⚠️ Actualités et événements

Présentation

Wikipédia est un projet d'encyclopédie collective établi sur Internet, universellement, multilingue et fonctionnant sur un principe de wiki. Wikipédia a pour objectif d'offrir un contenu librement réutilisable, objectif et vérifiable, que chacun peut modifier et améliorer.

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À propos de Wikipédia • Guide sur Wikipédia

Participation

Chacun peut publier immédiatement du contenu en ligne, à condition de respecter les règles essentielles établies par la communauté ; par exemple, la vérifiabilité du contenu ou l'admissibilité des articles.

De nombreuses pages d'aide sont à votre disposition, notamment pour créer un article, modifier un article ou insérer une image. N'hésitez pas à poser une question pour être aidé dans vos premiers pas !

Pour une grande partie de son histoire, Nantes fait partie de la Bretagne. Après avoir été un site portuaire important de l'âge des métaux, elle devient la capitale de la cité gauloise et romaine des Namnètes, le siège d'un évêché au Ve siècle, puis le chef-lieu d'un comté franç, illustré par la personnalité semi-légendaire de Roland. Point d'appui du royaume franc face à la poussée des Bretons, Nantes est conçue en 851 par Nommelin. S'ouvre alors l'histoire bretonne de la ville, dont subsiste le château, principale résidence ducale au xVe siècle, époque où Nantes est véritablement la capitale du duché de Bretagne et où commence la construction de sa cathédrale actuelle. Nantes perd sa prédéminence politique en Bretagne au profit de Rennes avec l'intégration, au début du xVe siècle, du duché dans le royaume de France. Les trois siècles suivants sont marqués par l'importance du rôle de Nantes dans le commerce international, c'est-à-dire, en grande partie, dans la traite négrière, qui connaît son apogée au xVe siècle et permet un enrichissement considérable du paysage urbain monumental.

Pendant la Révolution, la défense de Nantes est un enjeu essentiel de la guerre de Vendée (bataille de 1793). Après cette période difficile, la ville ne connaît pas de retour à la prospérité antérieure ; mais, au cœur du XXe siècle et au début du XXIe siècle, son développement industriel est remarquable dans la France de l'Ouest. Au XXIe siècle, le paysage urbain est marqué par le comblement de nombreux cours d'eau qui divisèrent la ville, puis par les bombardements lors de la Seconde Guerre mondiale. Dans les années 1950-1960, la classe ouvrière nantaise joue un rôle notable dans le mouvement social français (1955, 1968). Depuis la fin du xxe siècle, la ville a subi la désindustrialisation, mais est devenue un pôle du secteur tertiaire. Elle est ville universitaire depuis 1962. Les infrastructures portuaires de Nantes représentent un élément important du grand port maritime de Nantes-Saint-Nazaire, un des grands ports français.

Free/libre open source software (FLOSS)
diff --git a/releases/4.0.4/acpi-pnp-add-two-ids-to-list-for-pnpacpi-device-enumeration.patch b/releases/4.0.4/acpi-pnp-add-two-ids-to-list-for-pnpacpi-device-enumeration.patch
new file mode 100644
index 0000000..bfeeeb7
--- /dev/null
+++ b/releases/4.0.4/acpi-pnp-add-two-ids-to-list-for-pnpacpi-device-enumeration.patch
@@ -0,0 +1,4 @@
+From 622532bb2fad8fe342fb685727ae0be566f6be5d Mon Sep 17 00:00:00 2001
+From: Witold Szczepaniak <Witold.Szczepaniak@gmx.net>
+Date: Fri, 1 May 2015 19:05:20 +0200
+Subject: ACPI / PNP: add two IDs to list for PNPACPI device enumeration
+
+From: Witold Szczepaniak <Witold.Szczepaniak@gmx.net>
+commit 622532bb2fad8fe342fb685727ae0be566f6be5d upstream.
+
+Commit eec15edbb0e1 (ACPI / PNP: use device ID list for PNPACPI device
+enumeration) changed the way how ACPI devices are enumerated and when
+they are added to the PNP bus.
+
+However, it broke the sound card support on (at least) a vintage
+IBM ThinkPad 600E: with said commit applied, two of the necessary
+'CS001x' devices are not added to the PNP bus and hence can not be
+found during the initialization of the "snd-cs4236" module. As a
+consequence, loading "snd-cs4236" causes null pointer exceptions.
+The attached patch fixes the problem end re-enables sound on the
+IBM ThinkPad 600E.
+
+Fixes: eec15edbb0e1 (ACPI / PNP: use device ID list for PNPACPI device enumeration)
+Signed-off-by: Witold Szczepaniak <Witold.Szczepaniak@gmx.net>
+Signed-off-by: Rafael J. Wysocki <rafael.j.wysocki@intel.com>
+Signed-off-by: Greg Kroah-Hartman <gregkh@linuxfoundation.org>
+
+---
+drivers/acpi/acpi_pnp.c | 2 ++
+ 1 file changed, 2 insertions(+)
+
+---
-a/drivers/acpi/acpi_pnp.c
+b/drivers/acpi/acpi_pnp.c
+## -304,6 +304,6 ## static const struct acpi_device_id acpi_
+ ('PNP0006'),
+ + ('cs42xx-pnpbios ')
+ ('CS001000'),
+ ('CS001001'),
+ ('CS001002'),
+ ('CS000000'),
+ ('GMI1000'),
+ /* Guillemot Turtlebeach something appears to be cs4232 compatible */
+ + ('es18xx-pnpbios */
FLOSS work practices
FLOSS / Wikipedia
Coordination problems in FLOSS

Resource-resource dependency

Usability dependency

Shared output dependency

Task-actor dependency (task assignment)
Coordination in FLOSS teams

- Shared output dependencies handled by source code control system (e.g., CVS, SVM, Git)
- Usability is different
  - Usability dependencies proxy for users
- Significant differences in task-actor dependencies
  - Much more frequent use of self-assignment compared to a company
How about code interdependencies?

- Surprising lack of direct discussion about changes
- One possible explanation:
  - Developers have good mental models of the work and know what to do without talking
  - Still need to explain how such models are kept up-to-date
- Our explanation:
  - Coordination is supported by traces of work left in the artifacts communication (i.e., by the code not talk)
Work as coordination in FLOSS

- Stigmergic coordination seems to be part of the secret of the effectiveness of FLOSS teams

- Stigmergic coordination in FLOSS is supported by social and technical
  - SCCS enables developers to work independently and incorporate code updates from others
  - Work practices emphasize frequent commits of small units of work to limit conflicts often and early”; “atomic commits”)
  - Ensures that code updates are comprehensible to other developers
Stages of Motivation for Virtual Voluntary Teams
Online Engagement

Kevin Crowston & Isabelle Fagnon
Syracuse University School of Information Studies
crowston@syr.edu
http://floss.syr.edu/
Why do people contribute user generated content?

- Programming, documentation, bug reports in open source software development
- Content for blogs, photo sharing, rating systems & Wikipedia

Helpful to know motivations to design attractive systems or to estimate likely success of projects
Prior research on motivation in FLOSS

Economic model: benefit > cost
- Cost: opportunity cost of time
- Benefits
  - Future job offers & ego gratification from peer recognition, taken together as signalling
  - The working code itself

Major elements of expectancy theory

Vroom 1965

Figure from Samson 2005
Reported motivations for participation

% reporting high or very high

Directly paid
Salaried
Students

Self-determination
Altruism
Community identification
Selling products
Human capital
Self-marketing
Peer recognition
Personal needs for system
Motivations in Wikipedia

Some research (e.g., Kuznetsov 2006; Forte & Bruckman 2005)

Suggested motivations:
- Self-determination
- Altruism
- Community identification
- Peer recognition
- Reciprocity

Not suggested:
- Future rewards
  - Revenue from related services
  - Human capital
  - Self-promotion
- Personal needs for system
Opportunities for a richer model

Prior research doesn’t individual role in project…

…nor effects of the project

Initiator

Passive users

Active users

Co-developers

Core developers

Release coordinator

About 40% get some compensation
Our model: Two innovations

1. Individuals move through stages of participation
   - Motivations in different stages are different
   - Only a few advance to further stages

2. Within each stage, view contributions as volunteering, a kind of helping behaviour
   - Four steps in helping (Schwartz & Howard 1982)
     1. Recognizing a need
     2. Feeling of obligation and self-capacity
     3. Positive evaluation of costs and benefits
     4. Lack of psychological defence for non-response
Initial stage: CURIOSITY

**Preconditions:**
- Project is visible enough to attract attention (i.e., we’re)
- Individual is curious about project
- Time & expertise exceed expected cost to contribute

**Result**
- Initial contribution
- Individual moves from passive to active user
Attention to need for contribution

Perceived capacity to contribute

Initial contribution

Perceived cost of contributing

Positive evaluation of contributing

Perceived benefit of contributing
Second stage: Sustained contribution

- Individuals receive feedback on initial contribution
  - More positive for substantive contributions
- A few become sustained contributors
  - Work becomes its own reward
  - Individuals start to identify with community, leading to feelings of obligation to group
Third stage: Meta-contribution

A very few become “meta-contributors
- Foundation members in open source
- Maintainers, admins, sysops, bureaucrats or stewards in Wikipedia

Seems to be based on:
- Voluntaristic & helping nature
- Group identification

Feedback to previous stage:
- Meta-contributions enable more basic contributions
Four motivations for joining a social movement (Klandermans 1997)

- Reward motives
  - Personal gains from membership

- Collective motives
  - Positive evaluation of group’

- Social motives
  - Social reinforcement from other members
  - Identification with the group
    - Positive feeling of being part of the group
Testing the model

- Used data from the April 2011 Wikipedia Editors Survey to test the model

- Classified respondents
  - <10 edits: Initial contributor (413)
  - Higher access level: Meta-contributor (666)
  - Everyone else: Sustained contributor (4202)

- Reframed propositions as hypotheses about differences between initial and sustained contributors and between sustained and meta-contributors
  - Tested with logistic regression
## Hypotheses and data

<table>
<thead>
<tr>
<th>Hyp.</th>
<th>Motive</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Perceived need for contributions</td>
<td>Reasons to start editing (Q5a):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I saw an error and wanted to fix it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I saw a red link or noticed an article was missing, so I wrote it</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reasons to continue editing (Q5b):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I keep finding or looking for mistakes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I find articles that are incomplete or biased</td>
</tr>
<tr>
<td>H2</td>
<td>Domain expertise</td>
<td>Reasons to start editing (Q5a):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I knew a lot about a subject that was poorly covered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reasons to continue editing (Q5b):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I like to contribute to subject matters in which I have expertise</td>
</tr>
<tr>
<td>H3</td>
<td>Computer self-efficacy</td>
<td>Self-reported computer ability (question D12).</td>
</tr>
<tr>
<td>H4</td>
<td>Agreement with the project’s goals</td>
<td>Reasons to continue editing (Q5b):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I believe that information should be freely available to everyone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I like Wikipedia’s philosophy of openness and collaboration</td>
</tr>
</tbody>
</table>
### Hypotheses and data, 2

| H5  | Time available for editing | In school (D3b)  
|     |                            | Employment (D4)  
|     |                            | Has children (D5b) |
| H6  | Curiosity                  | Reasons to start editing (Q5a):  
|     |                            | I wanted to see whether anyone could edit |
| H7  | Positive feedback          | Interactions with others (Q18):  
|     |                            | Having others compliment you on your edits/articles  
|     |                            | Having your article(s) selected as featured article(s)  
|     |                            | Article(s) making it to the front page  
|     |                            | Having your picture(s) used in articles  
|     |                            | Getting a barnstar or similar award from another editor  
|     |                            | Another editor adding content/photos to an article you are working on  
|     |                            | Having other editors add content to article(s) you started  
| H8  | Negative feedback          | Interactions with others (Q18):  
|     |                            | Other editors pushing their point of view  
|     |                            | Being looked down on by more experienced editors  
|     |                            | Having your edits reverted without any explanation  
|     |                            | Having an article that you were working on deleted |
# Initial vs. Sustained Contributor

**Hyp** | **Construct** | **Odds** | **p**  
--- | --- | --- | ---  
H1 | start, saw an error | 108.0% | 0.608  
H1 | start, article was missing | 134.6% | 0.065  
H1 | continue, looking for mistakes | 239.0% | 0  
H1 | continue, incomplete articles | 121.3% | 0.175  
H2 | start, knew a lot | 107.2% | 0.632  
H2 | continue, have expertise | 132.5% | 0.045  
H3 | Computer efficacy (low to high) | 110.7% | 0.315  
H4 | continue, Wikipedia's philosophy | 87.5% | 0.373  
H4 | continue, information should be free | 91.9% | 0.581  
H5 | Not In School | 175.5% | 0.001  
H5 | No Children | 110.4% | 0.669  
H5 | Working, full-time | 129.7% | 0.226  
H5 | Part-time | 129.7% | 0.226  
H5 | Not employed | 122.8% | 0.247  
H5 | Married | 139.5% | 0.177  
H5 | Partner | 139.5% | 0.177  
H5 | Single | 175.9% | 0.011  
H6 | start, see whether anyone could edit | 61.6% | 0.006  
H7 | Good feedback | 36902 | 0%  
H8 | Bad feedback | 325.9% | 0  

**Construct** | **Odds** | **p**  
--- | --- | ---  
Age | 100.0% | 0.947  
Education, primary | 147.4% | 0.101  
Secondary | 160.5% | 0.069  
Tertiary | 206.1% | 0.018  
Masters | 230.4% | 0.028  
Female | 59.1% | 0.005  
start, friends contribute | 98.8% | 0.969  
start, demonstrate my knowledge | 79.9% | 0.219  
start, liked to share knowledge | 117.1% | 0.317  
start, learn new skills | 78.3% | 0.113  
start, participate in a discussion | 63.9% | 0.021  
start, assigned to edit | 40.2% | 0.002  
continue, professional reasons | 63.2% | 0.048  
continue, demonstrate my knowledge | 81.5% | 0.281  
continue, popularize topics | 111.0% | 0.479  
continue, gain reputation | 104.3% | 0.089  

\[ R^2 = 0.28 \]
### Hypotheses

<table>
<thead>
<tr>
<th>Hyp</th>
<th>Construct</th>
<th>Odds</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>start, saw an error</td>
<td>63.3%</td>
<td>0</td>
</tr>
<tr>
<td>H1</td>
<td>start, article was missing</td>
<td>95.4%</td>
<td>0.674</td>
</tr>
<tr>
<td>H1</td>
<td>continue, looking for mistakes</td>
<td>76.5%</td>
<td>0.015</td>
</tr>
<tr>
<td>H1</td>
<td>continue, incomplete articles</td>
<td>73.0%</td>
<td>0.004</td>
</tr>
<tr>
<td>H2</td>
<td>start, knew a lot</td>
<td>83.4%</td>
<td>0.091</td>
</tr>
<tr>
<td>H2</td>
<td>continue, have expertise</td>
<td>75.8%</td>
<td>0.013</td>
</tr>
<tr>
<td>H3</td>
<td>Computer efficacy (low to high)</td>
<td>117.5%</td>
<td>0.052</td>
</tr>
<tr>
<td>H4</td>
<td>continue, Wikipedia's philosophy</td>
<td>144.8%</td>
<td>0.002</td>
</tr>
<tr>
<td>H4</td>
<td>continue, information should be free</td>
<td>126.7%</td>
<td>0.065</td>
</tr>
<tr>
<td>H5</td>
<td>Not In School</td>
<td>106.1%</td>
<td>0.66</td>
</tr>
<tr>
<td>H5</td>
<td>No Children</td>
<td>133.7%</td>
<td>0.082</td>
</tr>
<tr>
<td>H5</td>
<td>Working, full-time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Part-time</td>
<td>91.2%</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Not employed</td>
<td>80.9%</td>
<td>0.118</td>
</tr>
<tr>
<td>H5</td>
<td>Married</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partner</td>
<td>75.7%</td>
<td>0.112</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>74.7%</td>
<td>0.073</td>
</tr>
<tr>
<td>H6</td>
<td>start, see whether anyone could edit</td>
<td>100.7%</td>
<td>0.966</td>
</tr>
<tr>
<td>H7</td>
<td>Good feedback</td>
<td>2473%</td>
<td>0</td>
</tr>
<tr>
<td>H8</td>
<td>Bad feedback</td>
<td>193.2%</td>
<td>0</td>
</tr>
</tbody>
</table>

### Construct

<table>
<thead>
<tr>
<th>Construct</th>
<th>Odds</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>98.5%</td>
<td>0.01</td>
</tr>
<tr>
<td>Education, primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>197.8%</td>
<td>0.015</td>
</tr>
<tr>
<td>Tertiary</td>
<td>195.7%</td>
<td>0.021</td>
</tr>
<tr>
<td>Masters</td>
<td>222.2%</td>
<td>0.009</td>
</tr>
<tr>
<td>Doctorate</td>
<td>205.0%</td>
<td>0.035</td>
</tr>
<tr>
<td>Female</td>
<td>117.5%</td>
<td>0.369</td>
</tr>
<tr>
<td>start, friends contribute</td>
<td>110.0%</td>
<td>0.712</td>
</tr>
<tr>
<td>start, demonstrate my knowledge</td>
<td>100.1%</td>
<td>0.992</td>
</tr>
<tr>
<td>start, liked to share knowledge</td>
<td>97.2%</td>
<td>0.817</td>
</tr>
<tr>
<td>start, learn new skills</td>
<td>80.4%</td>
<td>0.077</td>
</tr>
<tr>
<td>start, participate in a discussion</td>
<td>66.8%</td>
<td>0.044</td>
</tr>
<tr>
<td>start, assigned to edit</td>
<td>118.4%</td>
<td>0.682</td>
</tr>
<tr>
<td>continue, professional reasons</td>
<td>93.5%</td>
<td>0.742</td>
</tr>
<tr>
<td>continue, demonstrate my knowledge</td>
<td>80.1%</td>
<td>0.111</td>
</tr>
<tr>
<td>continue, popularize topics</td>
<td>83.4%</td>
<td>0.096</td>
</tr>
<tr>
<td>new, improved website</td>
<td>153.3%</td>
<td>0.001</td>
</tr>
</tbody>
</table>

\( R^2 = 0.18 \)
## Results

<table>
<thead>
<tr>
<th>Hyp.</th>
<th>Motive</th>
<th>Initial vs. sustained (a)</th>
<th>Sustained vs. meta-contributor (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Perceived need for contributions</td>
<td>Hypothesized to be greater for sustained contributors</td>
<td>Hypothesized to be lesser for meta-contributors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not supported: one only of four items predicts sustained contributor</td>
<td>Supported: three of four items predict sustained contributor (fourth is near significance)</td>
</tr>
<tr>
<td>H2</td>
<td>Domain expertise</td>
<td>Hypothesized to be the same</td>
<td>Hypothesized to be lesser for meta-contributors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partly counter to hypothesis: one of two items predicts sustained contributor</td>
<td>Supported: one of two items predicts sustained contributor (second is near significance)</td>
</tr>
<tr>
<td>H3</td>
<td>Computer self-efficacy</td>
<td>Hypothesized to be the same</td>
<td>Hypothesized to be the same</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supported: Not a significant predictor</td>
<td>Supported: Not a significant predictor (but nearly significant)</td>
</tr>
<tr>
<td>H4</td>
<td>Agreement with the project’s goals</td>
<td>Hypothesized to be greater for sustained contributors</td>
<td>Hypothesized to be the same</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Counter to hypothesis: two items do not predict sustained contributor</td>
<td>Counter to hypothesis: one of two items predicts meta-contributor</td>
</tr>
</tbody>
</table>
## Results, 2

<table>
<thead>
<tr>
<th>H5</th>
<th>Time available for editing</th>
<th>Hypothesized to be different Counter to hypothesis: only one of three items predict sustained contributor</th>
<th>Hypothesized to be the same Supported: items do not predict meta-contributor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H6</td>
<td>Curiosity</td>
<td>Hypothesized to be greater for initial contributors Supported: item predicts initial contributor</td>
<td>Hypothesized to be the same Supported: item does not predict meta-contributor</td>
</tr>
<tr>
<td>H7</td>
<td>Positive feedback</td>
<td>Hypothesized to be greater for sustained contributors Supported: item predicts sustained contributor</td>
<td>Hypothesized to be the same Counter to hypothesis: item predicts meta-contributor</td>
</tr>
<tr>
<td>H8</td>
<td>Negative feedback</td>
<td>Hypothesized to be greater for initial contributors Counter to hypothesis: item predicts sustained contributor</td>
<td>Hypothesized to be the same Counter to hypothesis: item predicts meta-contributor</td>
</tr>
</tbody>
</table>
Practical implications

- **Early stages**
  - Make project visible
  - Reduce barriers to entry (e.g., more modular architectures)
  - Provide positive feedback for contributions

- **Sustained contribution**
  - Provide continual opportunities to contribute
  - Ensure tasks seem meaningful
  - Articulate shared values

- **Meta-contribution**
  - Reward sustained contribution with increased authority and visibility
Research implications

In studying MVC:

- Be sure to consider role of participants
- Consider stage of development of projects
- Focus on the 2.5% who do the bulk of the work
  - But don’t
- Separate contribution from meta-contribution
  - Meta-contribution may be linked to leadership
Future empirical work

- Study growth of projects for evidence of feedback
- Test limits of model
  - E.g., does this apply to massively multi-player games?
- Figure out why so few women take part
  - At what stage in the process do they select (or are selected) out?
- Study process of socialization that shapes group identification