

Inspired by [Greg's insightful post](#), I thought I'd take a minute (or more) on explaining how Digg is a game.

Elements of a Game

In Game Theory, we care about the elements that arise from interactive decisions. Below are the main elements of a game:

- Players - who is interacting?
- Strategies - what are their options?
- Payoffs - what are their incentives?
- Information - how do they know?
- Rationality - how do they think?

In digg, players are the voters; the voters have n options; and, where non-paid voters are concerned, reputation is the over-riding incentive for voting a story (top-digger status, etc.); information come in the form of following the vast web of links of blogs on the web. Rationality — this assumes that the voters are rational & that each voter knows that each voter is rational and that each player knows that each player knows that each player knows that...ad infinitum.

How does Digg work?

I'll use [Philipp's concise summary](#) of how digg works:

The Digg system of measuring a story's importance is based on a semi-random set of people voting for or against a semi-random set of news stories.

The Urn Game

In graduate school, I played a really fun and revealing game called "The Urn Game." The game shows very simply how the concepts of GroupThink, Conformity, Paradigm Shift, and Information Cascades work. Here are the rules of the game:

There are two indistinguishable urns. Urn "W" has two white balls, one yellow. Urn "Y" has two yellow balls, one white. A proctor will flip a coin to choose an urn. You must guess which urn it is after seeing one ball from the urn AND AFTER HEARING ALL THE GUESSES OF THOSE BEFORE YOU. Your goal is to choose wisely.

In our version of the game, 8 students were called per round (new urn-draw each round). At each turn, draw out a ball without looking at any others *and without showing the ball to anyone else*. Return the ball to the urn, write your guess on the provided sheet, then give the sheet to the proctor.

Playing this game reveals a few things that are relevant to digg and to all social software:









- **GroupThink**: This game illustrates how conformity can be rational for individuals, even when they don't care what others do. The decisions made by

others convey some information — that is, *rational individuals may ignore their own information*.

- **Conformity:** People in a group often believe and do the same thing as people around them. This leads to an *Information Cascade* — that is, you do what other people do...etc...For example, if you are eating at a fancy restaurant and don't know which fork to use, you naturally look to see which fork the first person used, and you use the same one. Then, the third person notices which fork you and the first person used, and he does the same. And so on.
- **Paradigm Shift:** If wholesale conformity occurs, then voters decisions convey no information — that is, if the first 2 people vote for x and everyone follows the first 2 people regardless of their true feelings about the thing voted for, then 100 votes *conveys no more information than the first 2 votes*. We can further conclude that even when individuals are rational, the group may not be — that is, a few irrational individuals can swing the behavior of an entire group. These irrational individuals are phenomenally first movers also. In the case of Digg, these are the power users — these users commit to a strategy and are known as top diggers.

Digg is not a Prisoner's Dilemma

In response to Alex Bosworth's [thoughtful post](#), Digg is **not** a Prisoner's Dilemma. Some applications of Game Theory work, and some don't for certain situations. For example, Nash Equilibrium is not the right concept for some strategic situations.

		Prisoner 2			
		Confess		Don't Confess	
Prisoner 1	Confess				
	Don't Confess				

The Prisoner's Dilemma is about 2 players, not N players. The two key features of the Prisoner's Dilemma are (1) both players have a dominant (and rational) strategy to confess AND (2) both players are better off if they don't both confess. The Prisoner's Dilemma is the wrong metaphor for Digg.

A Proposed Way of Thinking about Digg

Digg is the online version of The Urn Game. What I see are power users, typically the first movers, wherein a vote is casted by one of the top diggers, and then a flood of comformity follows — that is, voters follow the first movers, typically the power users, and ignore their own rational feelings about the article being dugg and vote anyway, following the power user's vote. At a wholesale level, this creates an information cascade, such that the Nth vote conveys no more information than the first 2 votes. Philipp is right in his analysis on Groupthink — but, it's more than that:

Digg is a system that allows the power users to swing the behavior of an entire group.

Others Chime In

Here's [Kevin Rose's solution](#) to the Digg problem:

What is changing however is how we are handling story promotion. While we don't disclose exactly how story promotion works (to prevent gaming the system), I can say that a key update is coming soon. This algorithm update will look at the unique digging diversity of the individuals digging the story. Users that follow a gaming pattern will have less promotion weight. This doesn't mean that the story won't be promoted, it just means that a more diverse pool of individuals will be need to deem the story homepage-worthy.

I'm not sure what he means. But, arrington apparently gets it (or pretends to). I think what Kevin is saying is that Digg will weigh votes, based on the unique user's historical profile and voting data. Still, it's vague and I'm not sure what he's talking about. But, it sounds interesting.

[Arrington suggested](#) the following:

I think this is the right thing to do. Digg needs to continue to encourage people to recommend stories to their friends, but also find ways to get truly unique and interesting stories to the home page without the sponsorship of a Digg user group. Hopefully the algorithm changes will help. Another suggestion to improve things that I recently passed on to Digg CEO Jay Adelson: weigh a story digg more if it comes from perusing the "upcoming stories" area v. someone hitting the story via a direct link. Since friends often email or IM stories around via the direct link, it's more likely to be a vote from a group. A digg from the upcoming stories page is much more likely to simply be a user reviewing stories and picking the ones that he or she thinks are important.

Arrington's suggestion is truly lame — to weigh a vote coming from a previously dugg article completely supports the concept of Information Cascade.

[Calacanis, of course, has to chime in:](#)

Calacanis — [I like you](#), I really do — you're level-headed and you go against the tide, but you're wrong on this one. Digg and most social software smooth over time, and can eventually be approximated by a [poisson distribution](#). This distribution is what [Pareto](#) is built on; this means that social software — Digg, 'Scape, and all of them are not Democratic — they are Republics. A truly democratic society would mean that all votes are equally weighed — [a majority rule](#) —, but that's not the case with first-movers and top-diggers.

My Proposal

If Digg were to be relevant again, it must tackle the problems of GroupThink, Conformity, Paradigm Shift and Information Cascades.

- To tackle Groupthink, make it truly democratic again — do not profile Top Diggers or elevate anybody higher than anyone else. This includes no special weights on previous digging history, etc. — level playing ground for everyone, no monarchies or philosopher-kings.
- To tackle the problem of conformity, do not show profile or # of votes for up-and-coming digg articles. Just show the article link, with no profiles or votes attached to it. As a compromise, only show the profiles and votes on the articles that make the digg front page, but make them un-diggable from the front page.

Doing the above 2 items will most likely fix the Paradigm Shift and Information Cascade problem.

What's Left of Digg if Kevin Rose follows my advice?

If Kevin Rose follows my advice, Digg will become a user-generated meme, truly democratic, where the votes are equally weighed and blind to any first-mover, power-user, and irrational individuals that may sway the behavior of the group. The quality of the front page articles will be higher for sure. The social aspect of Digg will be compromised, but it will be relevant again.

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Below are other who have joined the soap opera:

- [Nick Carr, hardly an academic post](#), but quasi-interesting
- Good Stuff from MIT [here](#).
- On how Digg [follows the Pareto Principle](#) in its voting behavior
- J. LeRoy on [gaming the system](#)
- A history on the [Digg controversy](#)
- [More](#) on Digg
- [Pirillo weighs in](#)
- [JP does a quick bootstrap analysis](#) on Digg's Pareto behavior
- [An excellent article](#) by Clay Shirky
- More from CNET [here](#) and [here](#).

For good measure, there's a [Digg This](#) button below.