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Community-based trust on the internet

Tartalom

Introduction

Trust has many definitions and can be applied in many settings (see Tilly, 2010; Hardin, 2002 and 2005; Sztompka 1999; Gambetta 1996). Most people trust their relatives and close friends. I trust my washing machine (not to break down). I may trust the government or any of its institutions or services. I often trust vendors, postmen, repair men, kindergarten teachers, etc, to perform the services I buy from them. I might have trust in my future, or the future of my children. Scholars trust publications that have a high impact value, and trust colleagues who publish in such publications. People trust television news although they might feel deep distrust for journalists. To put it in a more succinct form, trust can be applied to natural persons (including self), persons-in-a-role (roles), institutions and content of any kind. In English we might use different terms for these varieties of trust. Self-trust would be properly called self-confidence. Trusting your child's abilities or future can also have the linguistic form of „being confident about" them. You can say you find this or that publication reliable. You can also say you know you can always count on your family. Scholarly journals might have a good (or bad) reputation; the same applies to individual scholars, certain commercial services or firms, etc. Some journalists, community leaders or business partners can be regarded as trustworthy.

In this chapter I'll stuck to the word „trust" for the simple reason that English synonyms might reflect useful nuances but in other languages – such as my mother tongue, Hungarian – these nuances are either lacking, or apply to different concepts and situations of trust. However, I will add "trustworthy" , and a concept that has no English equivalent – in Hungarian it is "bizalomgerjesztő"; meaning that something or someone looks or seems dependable, or inspires trust (more about this will be discussed in the last case study). Interestingly, it is used mostly in a negated form: someone or something does *not* look dependable or inspire trust.

In trust-research standard survey techniques usually distinguish generalized trust; an attitude that characterizes the person (trusting or not trusting) on a scale, a personality trait that might of course reflect previous experiences, and trust or institutional trust that applies to specific situations where trust (and its degrees) reflect a relation between trustee and trusted. It is also assumed that generalized trust is an indicator of the willingness to take risks (in general), while institutional trust implies an awareness of a specific risk with reference to the specific

relationship or action between the person and the institution, role or other person that she/he has some affair with.

On the internet, an example of high generalized trust (or interpersonal trust) could be the attitude of a teenager on an IRC channel, chatting with “nicks” or online personae and giving away information concerning herself. The other form of trust implies some form of transaction where an internet user wishes to use a service or buy something from a stranger and takes precautions against being cheated or any other harm that might hit him.

Early internet trust research focused on transactional trust (including artificial agents). Paul Resnick proved that there was a price premium for high reputation sellers on Ebay – meaning that people are more willing to buy, even at a higher price, from people who have a “good trust history”. I use this term to indicate the similarity of Ebay reputation and credit histories that most US banks keep, or, for new clients, ask for to establish the creditworthiness of an individual. In this sense, granting credit or granting trust in a given transaction are very similar, despite the difference of the setting and the mechanics of establishing a “history”. If we go further (both in time and in generalization), we can link early word-of-mouth referrals in long-distance commerce, Chinese guanxi, the Zagat dining guidebook and social networks – in a way, these are all techniques, or can be used as techniques, to establish “histories” that are relevant to judging the trustworthiness of a person, a service or an institution.

A word of caution is needed here. Ebay reputation mechanisms, word-of-mouth in commerce and – to some extent – guanxi are solutions to what game theorists call “the prisoners' dilemma”. Zagat and Facebook are not PD-related. Not all “trailing” solutions to trust can be analysed in terms of strategic interactions – on the contrary. In the next chapter I'll try to argue that although eBay is seen as a pure form of iterated n-person PD, this is an oversimplification. If we wish to understand where trust is needed, how trust works and what specific risks and techniques dealing with these risks arise on the internet, we have to go beyond game theoretical models.

When I submitted my dissertation proposal – in 2002 – I did not foresee how long it would take for me to finish writing. What was all excitement in 2002 became commonplace by 2010. On the other hand, since 2002 several new services have been created that both pose and/or solve new problems of trust and reputation. During the weeks I typed up my dissertation, at least three new services were launched – and these are only the services I that came to my attention while also writing a dissertation that took up most of my resources that I usually dedicate to monitor online developments.

In this paper I develop three hypotheses and put forward arguments to support them. If I use some empirical research, this is usually second-hand or ad-hoc research that I conducted on the internet. The arguments I develop here are theoretical and historical rather than empirical, although wherever I can, I will indicate how it would be possible to test them on large data sets.

My *first hypothesis* is that in a sense, nothing is new under the sun – the risks, types of risk or risky situations and interactions as well as risk-handling techniques, trust mechanisms and reputation mechanisms, or other solutions to trust-related problems more often than not mimic or extend offline mechanisms that turn up in human history and in some cases might even be rooted in human nature. This thesis is in direct contradiction with what I will call internet utopias from the pioneer age (from Barlow, 1996 and Levy, 1999 to Shirky, 2010).

However, social scientists should pay attention to the scale of these risks, as well as the risk-handling techniques I will come to describe. Scale transforms many solutions simply by increasing the volume of interactions, and scaling on the internet is very different. (Hinds, 2003; Schneiderman, 2003; Gladwell 2002, Ball 2005). An illustration for this is difference in scale of village gossip and blogosphere gossip (we could add city gossip and twitter gossip as well). Village gossip is as important in maintaining or creating reputations (and also reinforcing social ties and defining community boundaries) as blogosphere gossip. However, while village gossip rarely travels beyond neighbouring villages (and even if it does, it losts much of its relevance), blogosphere gossip potentially reaches as many people in diverse locations as many readers a particular blog or, especially, a blog aggregator has (Kibby 2005).

Anonymity was one of the first salient feature of internet interaction that was felt as strange and potentially threatening. Although I will argue that a) internet interaction tries to emphasize community where and when it is possible, b) anonymity has far less advantages on the internet, and, in a sense, is also less common, than generally assumed, the shift in general internet trends show a radical revision of internet membership. While earlier the content or extent of internet identity or internet selves, observable for others, was very different from IRL identities, now online and IRL identities are increasingly fused (for the dangers of this see Turkle, 1984 and 2008). While Turkle takes an extremely pessimistic view on the effect of technology on the self, I do not share her conclusions. As Barry Wellman showed in several experiments and field research, online interaction enhances weak ties without demolishing strong ties (as we mostly use technological devices to communicate with people we love).

My *second hypothesis* concerns the *kind* of community or "community" that is relevant on the internet concerning trust issues. I will argue that there is a community where there is membership-awareness in settings where trust-solutions work (as opposed to settings where trust solutions are offered but do not work). However, this community is based not on cohesion or common norms, or even interconnectedness. It is based on structural equivalence in an information network or, in general, in information economy. Structural equivalence means that in a network certain nodes (or available or actual positions) are similar in respect of their place within the network (thus, in the probability and the means of acquiring information or conducting certain types of interactions within the network). Structural equivalence (Burt, 1995; Burt, 2004; Weimann, 1994, Everett, 1996, Coleman, 1966) is a theoretical construct that applies to any network. What makes structural equivalence on the internet different from other observable cases is that individuals of structurally equivalent positions are aware of this equivalence, and can connect to other peers directly. This awareness – I will argue – constitutes the basic membership-attitude that characterizes communities but not necessarily networks with structurally equivalent positions (this is why Marx and later most Marxists where bothered by the lack of labour solidarity and class consciousness). Membership-attitudes or membership awareness is a precondition of norms or norm-based behaviour, even though not all minimal membership defined communities will produce norms. When I define "peerness" as I understand it, I will argue that although peerness based on structural equivalence is also created by mass media in general, it only becomes a potentially norm generating community on the internet (and this transformation is so powerful that it also transforms mainstream media).

I will also argue that the fact of having many anonymous communities that emerge fast based on structural equivalence and then develop their own membership norms has historical reasons. In fact, this type of peer consciousness which creates community membership-related attitudes and norms can only be understood by looking at the *history* of internet interactions and groups. To put it in another way, peer equivalence in structural positions can create communities (best examples are fan clubs that did grow into fan networks well before what I will call mainstream internet) but the types of norms and membership attitudes – thus, reputation-systems and risk-handling – that characterize internet services and/or communities are unique (Beenan at al, 2004; Fukuyama, 1995). On the other hand, I also take issue with traditionalists like Fukuyama who argue that trust is only possible in historically embedded communities with mutual dependencies. My argument implies that norms can

arise among peers who are not necessarily dependent on each other and who can easily leave the „game" or the community if they wish so.

In this hypothesis, on the other hand, I also challenge the view of rational choice theorists who claim that any social interaction can be constructed as a game where former knowledge and history of participants are indifferent to the outcomes (Friedman, 2000; Resnick 1999; Resnick, 2002; Kollock 1996; Kollock 1999, 1988). I will try to show that the theoretical model of Gintis (2010) fits online peer communities better than rational choice theory.

My *third hypothesis is* that the above two hypotheses, if true, entail that what in game theory is called mutual knowledge or common knowledge has a special place in internet trust problems, and it is this internet-specific common knowledge (and its content in types, situations or examples of it) that differentiate internet trust problems from IRL trust problems. Common knowledge is a precondition of coordinating action and is a structural part of being a peer. Again, I side with Gintis in the debate between pure rational choice and embedded social interaction. Also, anthropological arguments – coming from a game theorists – are presented in Chwe, 2003.

My *fourth hypothesis* is that the type of common knowledge and structure-based membership that is typical of the internet led to the rise of social network applications that transformed trust problems. Social applications also transform minimal membership type-communities and replace earlier forms of norm generating interactions with a mixed bag of „impression management" in the sense of Goffman, norms arising from real life interactions and the elements of shame and guilt that rarely occur in communities with minimal membership as opposed to trible-like communities (see below). From 2010 when I finished this dissertation to 2011 when I submit it, this became common place with the strategical move of Facebook (see more below). Henry Jenkins also provided arguments for the osmosis of mainstream media and user/viewer communities. However, Jenkins' view on fan communities goes far beyond the type of community I describe that is based, primarily, on peer consciousness rather than on shared enthusiasm for media contents. This implies – as the Facebook example shows – that the use of communities for sharing internet content is closer to recommendation systems based on collaborative filtering (the main example here being Amazon.com) as well as to fan communities. Facebook contacts were meant to create maps of real life networks but the need for coordinated interaction or information flow within groups who share some interest (but not necessarily personal tastes) lead to the creation of a mixed system of fan-

based, interest-based and networked-based formats within Facebook. Nevertheless, the recommendation features of Facebook are based on „friends" rather than similarity of interests – the Amazon paradigm (minimal peers vis-a-vis books or consumer items) is being replaced by personal ties in the recommendation (therefore trust) network of the internet. This also means that social internet – in principle – functions without dedicated reputation mechanisms. Facebook is indeed the end of an era, the era of peer membership.

II. A very brief history of the internet

For the purpose of the arguments unfolded in this paper, I will divide the evolution of the internet into three major periods. The division does not reflect technical solutions, it is constructed to describe periods with characteristic services, communities and interactions, as well as their ethos and language. The names I use are colloquial and although I do think they have theoretical significance, I will not try to argue that this division is the best or the most relevant for all purposes. The names will reflect my position as a participant observer. I became a "heavy user" in the period of 1996-1999, that happens to be the time when internet optimism was at its peak and then crashed (not only in terms of economics but also in terms of general hopes and presuppositions – or what we might call culture – of the internet).

I shall refer to developments before 1996 (that is, from the late seventies and early eighties on) as "the early days" or "pioneer age". 1995-96 is also important for my purposes here as a turning point in the sense that major internet services were founded around this time that defined mechanisms of trust (or risk management) for the next ten years (an eternity in internet time) while still rooted in the ethos of "early internet days".

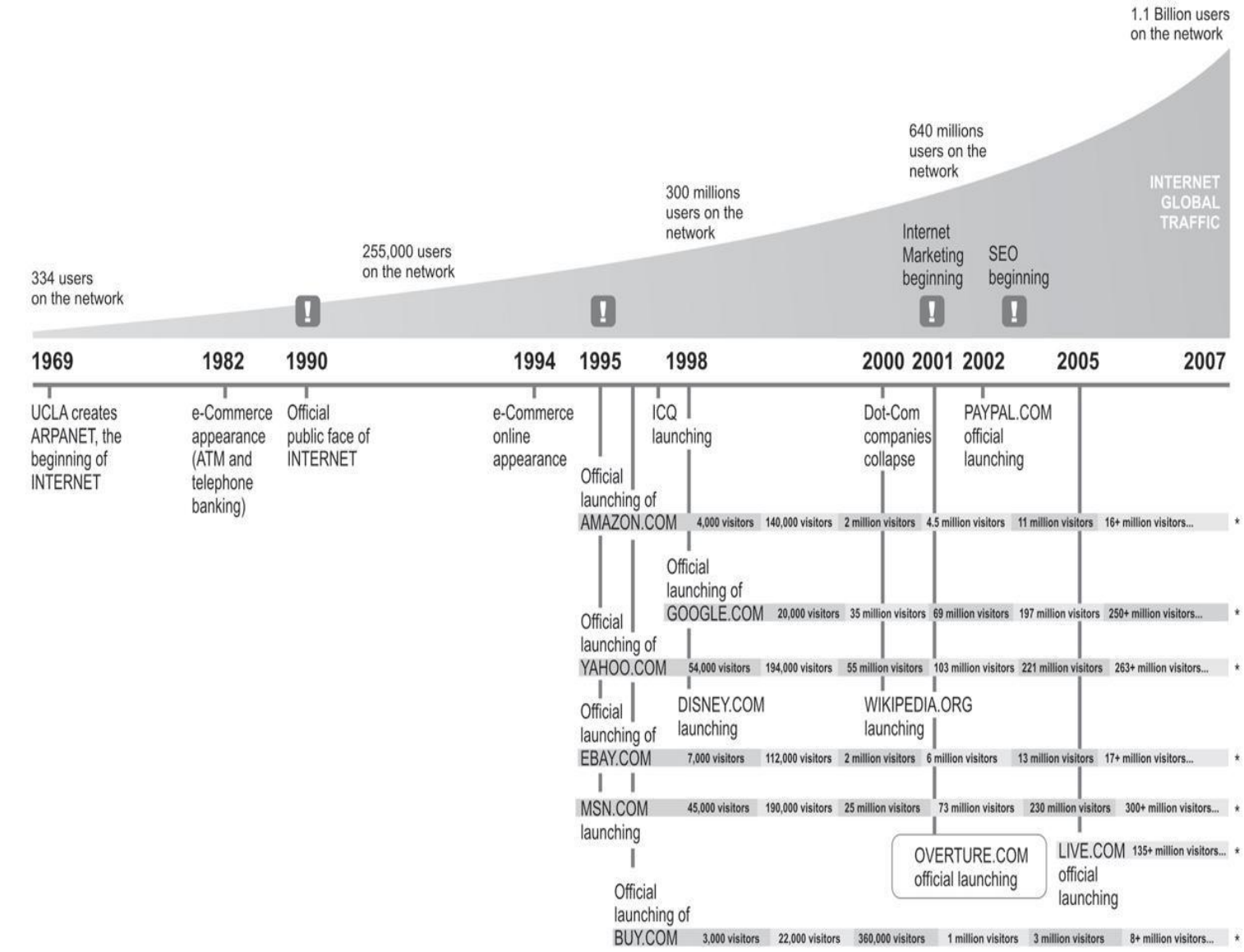
The second phase, 1996 to 2005, might seem a short period but it saw an exponential growth in internet use, a marked change in the user-base and user ethos, the demise of "early" internet ideology and the birth of services that define the internet up till now. I will call this second period "mainstream internet".

The last five years is the third period, with further exponential growth, that I will call "the age of social software". This is a rather imprecise description as „social software" in general

refers to any software that makes possible people-to-people interaction. Yet in the early 2000th social software was not yet recognized as leading to completely new, often walled-garden type, internet services. What is especially important about these services is that they offer integration, or „mashup" between different services and datastreams.

Social they are -- but so were forums, chatrooms and blogs as I argue, and in general, read-write-web concepts. What makes them true novelty – beyond adoption rate – is that instead of using hyperlinks they make navigation a different experience, mostly by embedded streams of individuals, topics or groups based on personalized selection. I have to add that this new type of interaction is similar to the DailyMe concept envisioned by Nicholas Negroponte, father of MIT Media Lab, back in the early nineties, later to be critized by Cass Sunstein as leading to a fragmented political public.

In a social service people „follow" datastreams, even though --'datastream' as a concept does not exist for most users; they follow whoever and whatever interest them. This seems a trivial difference but might give rise to what Cass Sunstein described as „echo-chambers" and a very selective access to information (by choice). I do not agree with Sunstein but this is beyond the scope of this dissertation. What is important is that users of social network *think* they individually follow other people, mostly peers, „friends" or people they admire while they, by this very process, form peer communities.



Early Days

The chart shows that during what I call "the early days of the internet" – the period up to 1995 or 1996 – the user base grew from a few hundred to a few thousand, then to a few hundred thousand people communicating over wire, from a distributed network of physical channels to a massive visual, hyperlinked-based network of World Wide Web that was much easier to access and use than script or command-based communication channels.

This is the period when e-mailing became an established form of communication, the gopher system came into being and the first asynchronous communication channels were created (such as Usenet forums) as well as the first MUD (Multi User Dungeon role playing game, by

Richard Bartle at Essex University). If we look deeper into the history of the early internet and the boom-bust period, we see that almost all technical solutions and service-types were in place by 1999. In this sense, nothing was invented – not even Youtube or Twitter, and definitely not Google or Facebook is "completely new" – they all had precursors reaching back to before 1999. What makes them what they are at present is the fact that they fine-tuned earlier tools at exactly the right time for exactly the right people: that they became part of and define some of mainstream media. Their user base is very different now from the nerds, geeks and hackers of early internet days. The ideas behind the services, however, are often very similar. In fact, the failures of some early services, services that are clearly pre-cursors of later mainstream services that produced the most spectacular successes and growth curves are explained by the lack of a critical mass of the right type of user and any viable business model. The critical mass of users emerged when peerness became defined not by belonging to the technologically savy but by simply using similar services (what I called minimal membership above).

Mainstream internet

Within the "mainstream internet" period I identify two phases. From 1995 to 2000 we witnessed an internet boom, resulting from improved search engines, easy hyper-text navigation and great expectations for commercial success, followed by the dotcom bust: several internet-based commercial services were founded but very few survived. Although this kind of trust issue – trust in internet-based business or trust in the performance of individual commercial services – does not concern us here, it is obvious from the chart that even the most successful sites (sites that survived the bust) drew only a few hundred thousand visits daily. It is also obvious from the chart that although those who entered early had some advantages for a while (such as Hotmail which was the first free sign-up e-mail service), this advantage has not necessarily proved lasting. Google, that now dominates the internet so much that even our vocabulary was changed ("google-ing" instead of "performing a search on the internet") was relatively late to enter yet proved far more successful than early search engines (WebCrawler, Lycos and AltaVista, the first search engines, all but disappeared). Google's success was due to its vastly superior method of providing relevant results. However, by the time social internet became the main form of internet use and traffic, Google started losing its leading position among major internet players as it never tried to construct social services and was rather late in discovering their appeal.

Blogging goes back to the early nineties but it enjoyed a sudden rise in popularity around the turn of the millennium – once a blog like boing-boing became the focus of the whole internet subculture (by then counting millions) blogging became a mainstream media format.

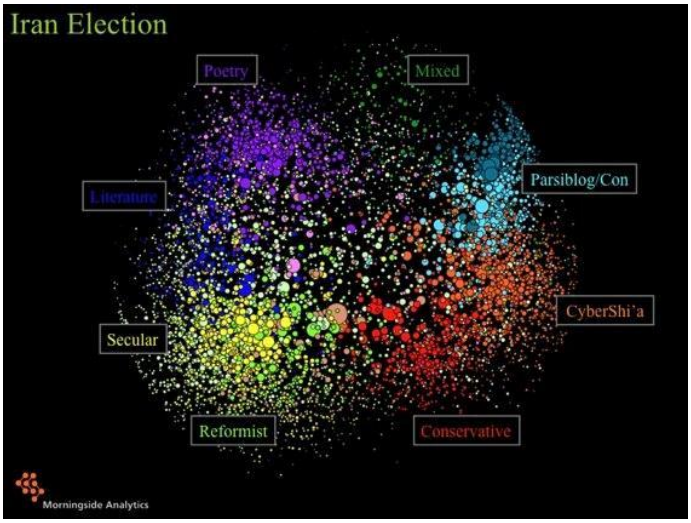
Evan Williams and Meg Hourihan (Pyra Labs) launched blogger.com in August 1999 (purchased by Google in February 2003) which is now the 8th most visited site on the internet. With the push by Google, and also the widespread application of free blogging tools such as Movable Type which was developed by the founders of Six Apart who also founded the first social networking site after they discovered blogging was a nice way to connect to people you know. LiveJournal (as the name suggests) was an online journal as well as a blog engine before it became a full-blown social network site. Wikipedia too was founded in 2000 but went through a rapid expansion (with many new languages) from 2002 on.

Technorati, the blog aggregation service (a service that search-indexes blogs, keeps track of incoming and outgoing links, thereby showing the "rank" of a blog and keeps statistics of bloggers and blog-use) in 2006 summarized the growth of the blogosphere as follows: Until 2006, blogs were still mostly blogging about news (that is, they linked to mainstream media sites) but Boing-Boing (the first cult blog, co-founded by Cory Doctorow) had a prominent place (was among the most visited sites on the internet around 2004) and DailyKos soon became a major political player – a political blog that started as a one-person enterprise of Markos Moulitsas and went on to become one of the main media outlet of progressive (or, in European terminology, left-wing) bloggers. It was also the first "netroot" politics organization (with many to follow). Another notable case is Move On, which played an important part in the Dean campaign during primaries in 2006 and which served as a model for the Obama campaign online (including the 1-dollar contribution idea). In recent elections in almost all countries of the developed world political leaders and parties tried to mobilize online.

A topic-based blogosphere map looks like this: there are easily identifiably hubs that also act as multiplicators in the general information flow and there are clusters and unidirectional links – a cluster that is connected to a hub with a unidirectional link (it receives no link from the site they link to) is a dead-end for the information flow. Boing-Boing and Daily Kos were such hubs with many incoming links: what they published, reached millions of readers, whereas what those millions of readers published were mostly seen only by their small circle of friends. This consequence of a scale-free network is mitigated by tools, such as a "trackback" – when a blog post is re-posted or commented on in another blog, the first blog receives a "trackback" link directing to the commentator (on scale-free networks see Barabási-Albert, 2008)

Mature blogosphere (all blogs and their links) is a large network with clear hubs (sites with many incoming links) and clustering of nodes. By now many snapshots are available of the current state of the blogosphere, however, the network has become so dense that such snapshot have an esthetical appeal but not much to offer for a network analyst. It is more meaningful to look at specific segments of the mediasphere – here we see the place of Christianity Today (a print publication with online presence) in the the network of blogs, forums and mainstream media. This is, of course, a so-called ego-centric network, outliers are not really outliers only in relation to Christianity Today. Such graphs can show clusters around a given node (and the degree of influence it may have on them and vice versa). Many analyists argue that such directed links express some form of trust or authority. To some extent, Google Ranks is based on directed links.

The chart below shows Russian language blogs' update frequency. It is notable both that by 2009 LiveJournal was still the most popular blogging application while in the English speaking world it was by then replaced by blogger (or blogspot – the two domains were merged when Google bought both). Such geographic boundaries appear naturally wherever native alphabets differ from the Latin alphabet and also for some other reasons. The clustering of users (here based on language) is typical of mainstream internet. Japanese internet users use Mixi instead of Facebook and it is the only country in the world where Twitter has more subscribers than Facebook. Japanese mobile culture is so distinct that it is said to be a "Galapagos" island of mobile internet (referring to Darwin's discovery that species at the Galapagos developed in isolation from other locations, therefore exhibit strange characteristics). China which has the fastest growing internet user base has homebred mainstream applications, Baidu for search and QQ for social networking and messaging.



Examples abound – one blogging map will become important to us so I present it here.

It is the Iranian blogosphere before the 2009 presidential elections (to be discussed later in a separate chapter). The map was created by the Harvard Berkman Center (http://cyber.law.harvard.edu/) that

runs many programs on internet democracy, internet and youth, and attracts major internet "pioneers" such as Jonathan Zittrain or Ethan Zuckerman whom we will meet below in another context. Berkman center had a research project that investigated the role of Twitter (see below the case study) in the Moldavian and the Iranian revolution or unrest (the right choice of words is not obvious). (See http://www.eng.kavkaz-uzel.ru/articles/13149/).

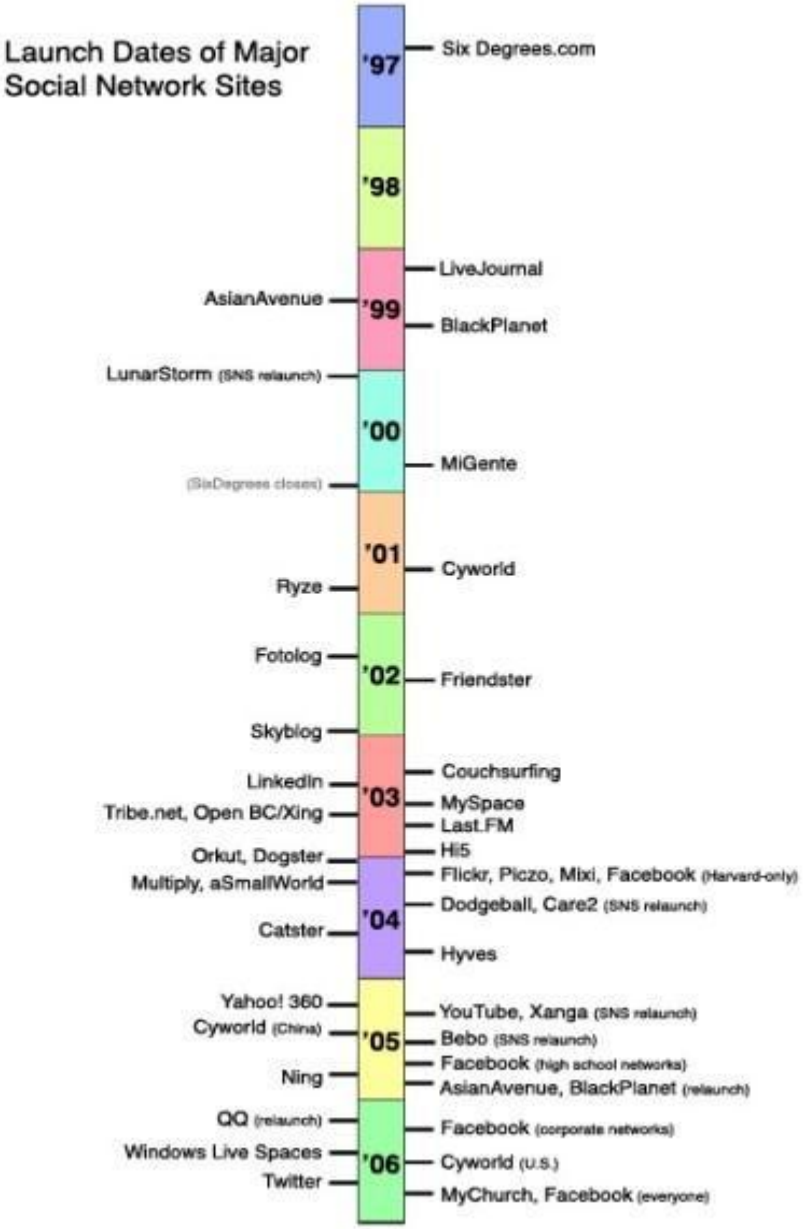
In 2010 Berkman Center published a map of Iranian blogosphere during the 2009 election protests. The maps showed the information hubs and blogs containing derivative information. As of 28th September 2010 when I checked the site, the interactive blog was published with an explanation showing that there were only four major blogs acting as hubs but few others of the thousands of Iranian blogs could "see" all four of them. By 7th October when I tried to retrieve the same map it was removed, what is more, it seems Berkman Center succeded in removing all internet traces of the picture (this must have required considerably effort and resources, and an agreement with Google to block such searches). Berkman center maintains the link – with an empty page. They did not need to state the obvious: this map posed a very real danger to those hubs and any further blogger linking to them.

The internet of social software

Although blogging and social networking are two distinct types of internet service, as the above short history and especially the link-maps show, blogging was, in a way, promoting social networking, visualizing networks, publishing on and linking to allies and foes. In short, social networks are a logical consequence of the mature blogosphere, so much so, that by now it is not easy to say whether a service is a blog engine or a social network engine.

Social software and social networks – its most popular forms as of 2010/2011 – bring us back to the peer society of the internet, and the common knowledge thereof. As my main argument concerns the special kind of membership that fosters trust, social networks offer an interesting field of examination. In the initial phase of the social network period, users presented themselves to each other, providing cues (false, misleading or true) and signaling their place in the information economy and in the community emerging around certain services. Communities establish norms that may come into conflict with the rules of service providers, and a negotiating process takes place. As community members are only minimal members – users might choose to remain outside community debates or simply be present as "lurkers" --, membership feelings might be latent and become manifest only when joint action is needed or

when community boundaries are threatened. In all these cases common knowledge of structural positions, norms and points of reference define the community (latent peer community becoming actual), as opposed to the regular interaction of all members with all other members (community based on frequent interactions).



The first social network site was established as early as 1997. SixDegrees.com was established in 1997 as the first social networking site that had registered users who could identify their first, second and third degree acquaintances and post messages for them. It combined features of other social softwares, such as the buddy-list of MSN messenger (where one could keep a list of friends), services that offered profile-pages (such as dating services) and the concept behind Classmate.com that – in a very similar way to the later Facebook – created ways to look for university classmates (although did not provide profiles). It was a fairly successful site, having a million registered users at its peak but it had financial difficulties in want of angel investors or a business model to cover the costs.

(See dana m. boyd and Nicole B. Ellison: Social Network Sites. Definition, History and Scholarship, http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html).

Six degrees is a concept that was first introduced as a thought experiment by Frigyes Karinthy the Hungarian writer and poet and taken up by Stanley Milgram (not that any direct link can be proved, although Milgram's mother came as a Jewish refugee from Hungary), in 1967 as the

"small world problem". He tested the hypothesis that anyone in the US could be reached by anyone else in a finite number of steps by giving a package to 60 persons in Wichita, Kansas (in a second round, to people in two different states) and picked a destination person in another state. He only asked the subjects to do their best to pass on the package to a person whom they know on a first-name basis and who they thought could bring it closer to its destination. He concluded that the average number of steps between any two individuals is six. However, due to the design of the experiment, he examined only the packages that reached their destination, and only about a third did. Academic critiques, most notably Judith Kleinfeld pointed out that the broken chains indicate that in fact there are people who may face a divide that cannot be crossed – due to education, social status or race (Milgram, 1967; Kleinfeld 2001).

In 2003 Duncan Watts published the results of an e-mail version of Milgram's experiment. He set up a Web page and recruited 18 targets in 13 countries. In the end, 61,168 starters signed on, and 24,163 chains were begun. Of those, only 384 were completed. Those who finished their chains did so within slightly more than four links, on average. Watts, unlike Milgram, included a survey with his study, and one of the questions asked people who hadn't finished to give their reasons not to forward the letter. Less than one-half of 1 percent of respondents said they had failed to pass the e-mail on because they didn't know who to send it to. Watts believes the majority failed because of other problems, mostly lack of real incentives (as opposed to chain letters, be it scams or hoaxes, in their own personal universe).

Finally, two scholars ran the test on MSN Messenger, identifying 180 million nodes with 1.3 billion undirected edges in a graph, analyzing actual conversations (interactions) between 360 million people. Jure Leskovec and Eric Horvitz found that "that people tend to communicate more with each other when they have similar age, language, and location, and that cross-gender conversations are both more frequent and of longer duration than conversations with the same gender." http://arxiv.org/abs/0803.0939v1 This shows that for P2P communication minimal membership complemented by knowledge (or presumed knowledged) of the socio-demographics of peers.

What social networks add to strong ties and communication with friends are features that help the user keep track of weak ties while allowing for different incentives in communication with strong-tie friends and weak-tie acquantainces (or second degree persons) (On strong and weak ties see Granovetter, 1973).

Social networks do not arise because there is software for it. The software services thrive because there are underlying social networks where people do have good reasons to connect (that is, better reasons than to contribute to a scientific experiment). This also means that social networks put an end to the minimal peer membership I described and are revolutionize the structure and information flow of the internet.

Small world experiments demonstrate the gap between minimal membership and social network membership when common knowledge *and* communication opportunities are not present to all members. Six degree or small world experiments do not provide any kind of membership through internet interaction and although subjects are in a structurally equivalent position (vis-à-vis the researchers), they are not peers in the sense of being in a game (in a game theoretical sense) of repeated interactions. They do not have what I deem most important for weak ties: a common knowledge of the nature of ties and the nature of their membership in the web of relations.

On the other hand, mature social software, especially social networks, offers (or even require) rich membership rather than minimal. Here common knowledge of being peers, and the sources of common knowledge, become increasingly replaced by knowledge of peers who are seen not as peers but as members of one's rich personal network, online and offline. Rich membership means presenting information that used to be irrelevant for group membership, while they can do well without any coordination and reputation systems. Membership here is a means, not an end in itself, and is closely bound up with IRL identities. Trust is produced on the basis of rich information rather than based on the observance of common norms and the order of seniority.

III Early trust related problems and solutions

Trading

In 2002 major researchers (such as Paul Resnick and Peter Kollock) started investigating the economics (or cooperative games) in such services as Ebay and analyzed risks involved in trading with total strangers over the internet.

By 2010 Ebay – and other auction sites – evolved, and the Ebay specialty – the first online reputation system – was copied by other sites, while new mechanisms were created to protect sellers and buyers. The feedback system was revamped to reflect the changed nature of interactions on Ebay. Presently, in addition to the still important reputation scores, the following mechanisms are available to support trust between trading partners. A micropayment system was introduced in 2002 called PayPal that serves as an online banking account so that traders do not have to submit their credit card numbers or send money in any other way. PayPal also offers extra fraud detection features. It matches the address of the trading partners to their credit card statements (to establish a PayPal account, you have to let PayPal verify your bank account and your personal details related to that bank account). They also operate a Resolution Center to help resolve disputes between trading partners. They offer Buyer protection for Sellers – which in case of a dispute and within certain limits will reimburse the buyer if the goods never arrived or are of significantly worse quality than advertised. They keep a full transaction history so account holders can review all their transactions. Beyond this, PayPal also collects feedback from its millions of costumers concerning unsafe websites, phishing (fraudulent emails and sites that collect sensitive information under false pretenses or masquerading as a legitimate website, e.g. a bank) and fake sites that pretend to belong to some well-know brand that users tend to trust.

Several trading sites offer one of many trust-enhancing "seals" such as Verisign (that certifies the level of security of data , e.g. credit card numbers, submitted; see), TRUSTe (which certifies confidentiality and privacy and claims to raise the transaction rate by as much as 87%; http://www.trustee.com/), and BBB (Better Business Bureau that checks the ethical standards, legal documents and any legal actions or user complaints filed against an online service; www.bbb.com). There is surprisingly little research done on the impact of these seals – how-

ever, the few examples suggest that some seals do have a trust-enhancing effect (Beltramini, 1993).

It is instructive to compare various strategies of commercial enterprises offering online transactions. Some small services – there are dozens – offer to compare prices through different sellers and allow users to rate these sellers. These services are not very reliable and are used much less frequently. Their obvious feature is that they do not provide any membership – not even minimal membership --, as there is no way peers can communicate.

On other trading sites (the prime example being Amazon that offers used items from third party traders) eBay-type reputation scores are indicated and such feedbacks – after reaching critical mass – are seen as reliable indicators, coming from minimal membership-peers.

After the rising popularity of social networks, and especially the tools offered by Stumble Upon, Last.fm Twitter and Facebook, personalized recommendations and in general social marketing – a hype of the last two years – are seen as solution to the trust problems related to online commerce.

Now there are several web services offering reputation scores and buyer protection. Still – based on sampling certain items for sale – in Hungary most trading goes on in advertisement sites, without any formal protection or trust-enhancing mechanisms. It is hard to judge the rate of completed transactions simply by looking for items advertised.

However, a site dedicated to computers, computer parts, handhelds and telephones – that, significantly, started as a blog for computer news and reviews and attracted a userbase whom they now offer various community features (forums, badges for old members, etc) – has an informal norm that sold items should be removed (or rather, they appear as striked-out posts). The norm is not always respected but buyers (and senior sellers) might become ra-ther angry if transgressed, expressing their views in private messages or forums.

Based on striked-out items, there is high-volume transaction on the site. Despite many successfully completed transactions, the sysops/editors of the site feel compelled to post warnings. Their language reflects that the trading opportunities are offered as a community fea-ture, without any guarantees, and are rooted in community norms.

They post the following admonition whenever you exchange a message with a potential seller/buyer (the languague is informal first-name based):

> **To put it bluntly**: *never* send money to *anyone* in advance here on HardverApró!
>
> **More about this**: recently there were many instances of fraud. Users who seem nice and trustworthy ask you to send some money on the pretext that they need to cover COD costs. They abuse your trust. Every week we have new cases. Police investigation will usually solve the case because *perpetrators are easy to find and identify* (my emphasis, EB) but these cases will take time and your money will not be recovered for years.
>
> Here in HardverApró – as opposed to Vatera and Teszvesz (online auction sites in Hungary – EB) – there is no certified means to check personal information, *it is not our custom here* (my emphasis, EB) to send money in advance; it is irresponsible. It is stupid, in short. We always said so, below each ad, in a grey box. Still, many think this is superfluous and stupid. *No, it is not!* We can't put it more clearly and succintly. **DO NOT SEND MONEY IN ADVANCE! (http://hardverapro.hu/allando/szabalyzat.html)**

The language (as I noted) is „early days lingo" for dummies. If there is any signature (there is no signature in the above guide), it is „The Team". In prohardver.hu – although by now it is part of a large media empire – old community solutions, services, membership-style and lan-guage was preserved. For a good reason, as we'll see below. It is not simply the warning, it is the language of the warning and the implied authenticity of the persons who wrote it (sys-ops/editors of the site) that endows it with trustworthiness.

To facilitate this process, moderators were also selected, black-lists were set up, although in a quite informal forum-post format – http://prohardver.hu/tema/a_fekete_lista/hsz_1-50.html), and there is a way to suggest topics for moderation and notify administrators of po-tential risks with particular users.

But Prohardver.hu is now incorporated as a Ltd., and is the fastest growing advertising service in Hungary (expanding their operations to real estate and other product categories). Recently it was purchased by one of the largest online media empires in Hungary. Therefore the Terms and Services page that also includes the passages I quoted above is a strange mix of informal community interaction and the formal legal language of corporations.

Risks of and trust in content

From 1999 to 2002 professional organizations, especially the medical profession, were deeply worried about the unverified medical information available throughout the internet in personal websites or forums. UCG was seen both as potentially misleading, as a cheap way for hack doctors to advertise their ware, and finally as a threat to the authority of the medical profession. Soon, however, recognizing that providing reliable information on the internet is a much better way to prevent misleading information from spreading, an American governmental agency, NIH (the National Institute of Health) started offering patient advice, and many major clinics (most notably Mayo Clinic) created their online content. Soon specialized services followed, such as WebMD, with accessible articles and a good interface to search. Meanwhile, the debate whether it is possible or ethical to offer medical advice – or therapy – online was transmuted into the question as to how to do it best. Practitioners see the online channel now as a very convenient way to access clients who might otherwise be dispersed in space. The HONcode seal was created to show that information on a medical sign is reliable (http://www.hon.ch/HONcode/Conduct.html) and most professional sites ask for HONcode certification.

While professional content providers rely on HonCode, other – and far more numerous – sites are a mixture of user generated content, peer communication, advertisments (covert or open) and endorsement of products. Such sites derive their authenticity from their user base rather than any content they publish or – especially – any product they endorse.

When Google jumped the bandwagon and launched Google Health it became the least successful among its applications (so far) but the idea of collecting all health records in one place and sharing it with others – experts or peers – is a recognized need. Above I argued that a weakness of Google is that it does not rely on communities – health information is more likely to be shared within communities, especially peers.

A recent example is Patientslikeme.org, a website that was set up by parents whose child suffered from ALS (an irreversible neurodegenerative disease). Soon many other communities sprang up on Patientslikeme and it even drew the attention of medical companies. (A clone of Patienslikeme opened a few weeks ago in Hungary). It is recognized now that this kind of medical information (user generated content) does not replace, only complements medical advice. By 2010 health-centered thematic sites were created that incorporated both expert opinions and user feedback, and this trend, at present, seems to extend to all media outlets, including news media and government information sites.

UGC and its discontents: Wikipedia

Similar arguments appeared, grouped under the heading of "the cult of the amateur" (after Andrew Keen's book, *The Cult of the Amateur*; Currency Publisher; 2007) in critical publications that target user generated content (also known as UGC), concerning Wikipedia. As Wikipedia.org states on the article on Wikipedia: "People of all ages, cultures and backgrounds can add or edit article prose, references, images and other media here. What is contributed is more important than the expertise or qualifications of the contributor. What will remain depends upon whether it fits within Wikipedia's policies, including being verifiable against a published reliable source, so excluding editors' opinions and beliefs and unreviewed research, and is free of copyright restrictions and contentious material about living people. Contributions cannot damage Wikipedia because the software allows easy reversal of mistakes and many experienced editors are watching to help and ensure that edits are cumulative improvements. Begin by simply clicking the *edit* link at the top of any editable page!

Wikipedia is a live collaboration differing from paper-based reference sources in important ways. Unlike printed encyclopedias, Wikipedia is continually created and updated, with articles on historic events appearing within minutes, rather than months or years. Older articles tend to grow more comprehensive and balanced; newer articles may contain misinformation, unencyclopedic content, or vandalism. Awareness of this aids obtaining valid information and avoiding recently added misinformation (see *Researching with Wikipedia*)."

Already in 2000 when Wikipedia was born the quality issues related to free editing deeply worried academics. This was the reason why one of the founders, the philosopher Larry Sanger, left the Wikipedia project. Wikipedia was first started as Nupedia, a peer reviewed, expert written encyclopedia, and the contributors used the wiki software to speed up communica-tion among themselves. Jimmy Wales, the other founder, soon realized that wiki content was growing fast, as opposed to Nupedia content that wasn't going anywhere, due to the slow process of peer review and a lack of incentives of academics to contribute. Sanger went on to found another expert-based online Encyclopedia, called Encyclopedia of Earth. The EoE was

launched in September 2006 with about 360 articles, and as of March 2010 had over 5,300 articles. Compare this to the famous quote on Wikipedia "At a rate of 600 words a minute, twenty-four hours a day, a person could read nearly 27,000,000 words in a month. In the month of July 2006, Wikipedia grew by over 30,000,000 words. Given this, it is **unlikely** for any single reader to read all of Wikipedia's new content. Reading the current incarnation at that rate would take over two years, and by the time they were done, so much would have changed with the parts they had already read that they would have to start over. Therefore, the best way to get an idea of the bigger picture is with statistics".

By 2010 Wikipedia had 3,411,810 articles and 13,043,060 registered members, with 1777 administrators. Daily visitors are about 13 million strong, although it ranks only 7th now among most visited sites. If unwillingly, as Wikipedia grew, Wikipedia founder, James „Jimbo" Wales put into practice a more and more elaborate set of rules and internal oversight mecha-nisms, to prevent unintentionally or intentionally misleading information. The main princi-ples of Wikipedia had been there from the very start: contributions are supposed to be based on published research, take a neutral point of view when dealing with contested issues, give full references, include no opinions or original views (including original research even if it is up to scholarly standards). However, these are guidelines – and guidelines only. At the scale and speed of the expansion of Wikipedia it is extremely difficult to monitor the behavior of contributors and check all articles. Still, through a slow evolution a social mechanism emerged from among the most devoted first wikipedians. Some took on administrative tasks, acting on prompts from other members who specialize in monitoring new articles and changes to exist-ing ones within certain scope or branch of knowledge (such as physics or biographies of American poets, etc). When sub-specialization needed, sub-specialists are recruited from trusted frequent contributors. These admins and editors communicate through dedicated mailing lists. Technicians are asked to provide tools that help automate certain tasks, such as putting a warning signal on an article that it contains original research or no adequate refer-ences, hunting for trolls and blocking them, creating easy-to-read labels (such as "this article is a stub") that state the level of the article according to the standards of Wikipedia (these tools are called bots).

By now the management of the admin community takes up as much time as editing (according to a Hungarian wikipedian whom I interviewed) because it is vital that admins and editors resolve their differences while there is no mechanism to do so. As we will see in the examined cases when we get to tribal formations, grass root democracy rarely leads to satisfying resolu-

tion, and in some cases it leads to expulsion of valuable members of the community (as it happened on Daily Kos or on Wikipedia). Expulsion here is of course a metaphor – it means these individuals, although high in reputation, choose the exit strategy when they cannot gain majority consent for their ideas or proposals. Exit is not easy but it happens (as I described above), in some cases it is called "forking" (when dissenters start up a new version of the blog, forum or wiki or other site they are leaving, and set the rules, the tone and the values and roles according to their tastes).

An interesting paper by (Anthony et al, 2009) examines why Wikipedians (Jimmy Wales encourages this usage – as if writing for Wikipedia resembled belonging to a nation, a religion or any other social group large enough to have a separate word to describe members) contribute. It goes against basic economic theory (just as eBay does as we'll see below), and cannot even be explained entirely by seeking reputation as many contributions are anonymous. Anonymous contributors tend to contribute once or twice – simply correcting a spelling error or adding a sentence in their area of expertise. Sabine Niederer and Jose van Dijk (Niederer 2010) showed that – based on statistics of "rolling back"; that is, undoing a modification to an article in the French and the Dutch versions of Wikipedia – anonymous contributors, especially those who contribute less, are just as reliable as registered users who might want to seek reputation. He explains this by pointing out that the costs of a correction or small contributions are extremely low. However, in my opinion, the quality of such contributions is not explained by the low entry threshold and the self-rewarding act of contributing. I would argue that Good Samaritans (as game theory refers to people with purely altruistic motives) who contribute once tend to be educated enough to understand wiki editing which is easy but not as easy as posting comments to blogs. Wikipedia (or rather the software that is behind it, mediawiki) still uses html code in editing mode. Whoever makes a contribution only once should understand html editing easily (a user with several contributions can go through a learning process), and this requires basic knowledge of html tags. It is not easy to prove but I surmise that someone who recognizes html tags instantly has a strong motivation and a non-consumer attitude to internet services.

I return now to the "cult of the amateur" argument. Andrew Keen had three different kinds of reproaches against anything like Wikipedia. One was the lack of professional control, reliability and scholarly attitudes. The second is that Wikipedia and blogs are "parasites" as they use sources of knowledge that cost considerable time and money to produce and then provide free access to them. The third is the values behind the read-write web: universal grass-root

democracy is dangerous as there are no filtering mechanisms, authority is devalued, and all kinds of strange and unworthy subjects are cultivated.

I do not intend here to defend Wikipedia against these arguments, although I tend to find them much less compelling than the author. However, it is interesting to note that some time before his book (and the original article in the *Weekly Standard*, the leading neo-conservative publication) appeared, *Nature* conducted a small research. *Nature* is of course a highly prestigious publication, probably the most desired place for natural scientists and they wanted to test if peer reviewed expert articles fared much better than Wikipedia. They selected several dozens of articles from Wikipedia and Encyclopedia Britannica on a broad range of subjects that Nature covers, and sent them for peer review to acknowledged experts of the field without telling them where the article came from. They got back 42 reviews. Reviewers found only eight serious errors – that is a general misunderstanding of vital concepts. Four came from each side. In addition they found minor factual errors, omissions or misleading statements. In this field, Britannica fared somewhat better: it had 126 such errors against Wikipedia's 162. ("Internet Encyclopedias go head to head" by J Giles, *Nature*, 14th December 2005).

These examinations showed that the quality of an article in Wikipedia and Britannica is a close match in subjects that can draw on broad scientific literature, and on subjects where individual values are less important than verifiable facts and experiments or calculations. In other subjects, targets of flamewars on Wikipedia, Britannica can maintain a scholarly distance while on Wikipedia all kinds of special limitations had to be put in place (including "freezing" articles – making them uneditable, thereby turning on the founding principle of Wikipedia). Keeping in check flaming and trolling, and keeping the ever growing community together, is more important on Wikipedia now than ensuring a critical mass of quality contributors. In an earlier paper I applied the satisficing model of Herbert Simon on information seeking behavior online: what users look for is information that is good enough for their purposes. Wikipedia does provide that information on most subjects. As some commenters put it,

> by uncle frank--2008 December 18, 2005 3:36 AM PST
>
> I have Encyclopedia Britannica installed on my PC. A lot of articles are out of date. For example encyclopedia Britannica describes IBM as a hardware manufacturer while Wikipedia describes IBM as a hardware manufacturer and a major consulting firm (IBM Global Services revenues and business consulting revenues are greater than hardware).
>
> by Decoy256 December 18, 2005 1:53 PM PST

Britannica is reliable. Britannica is slow. It sacrifices speed for accuracy on a narrow spectrum of topics. Wiki is less reliable, but then again, how often do we need to know all the nitty gritty details of a subject? When trying to find out the distance to the Moon, f wiki causes me to be off by 100,000 miles, no big deal, to me. But here is the big misunderstanding. Wiki is fast and growing. It has a MUCH broader range of topics AND you can directly link to external websites to find out more. If something happens in the news tonight, you can bet that Wiki will have something up tomorrow. It may not be 100% accurate, but I'll sacrifice a little accuracy for information now. Additionally, you are not going to find an article on "1337 speak" in Britannica. Nor will you get an article "Stargate: SG-1" in Britannica. As far as American culture goes, Wiki is king. Also, there are alot of fringe interests out there that don't get a whole lot of attention by major publishers, but they have entries in Wiki. All in all, I think that Wiki has done more to raise the "general" knowledge of people than Britannica, simply because it gives your the information you are looking for quick and gives you enough general information so that you can go from there and research the subject further

by perspective16 December 18, 2005 5:05 PM PST

And finally – perhaps the most relevant comment that shows the importance of having a trail (a history) in creating authenticity:

Valid Reference due to history!

by RobertRFreeman December 27, 2005 8:16 AM PST

Wikipedia keeps a history of changes, so you can identify a point in time version of an article for verifiable referencing. Just remember to include the date/time with your reference in place of a version number. Anything any joe says at any time can be a reference in a college level paper. The authority of the reference is the question. Wikipedia tracks the history of an article, so verfiying the overall validity of an article is as easy as browsing the history to view edits. Generally, the more people that have edited an article, the more accurate it will be. You can also easily spot POV or vandalism by content changed. It's too bad EB doesn't offer a history of changes broken down by source! What Wikipedia really needs is a notification system for changes. *They have introduced that since 2005 as I explained above – EB.* That way anyone referencing or modifying an article could register for notifications and be immediately notified of any changes. One more thing, when researching, always look at all sides of any issue. Wikipedia should be used as one of many references, and is great as a starting point. And once your research is completed and if you find the Wiki article lacking, then change it!

(Source of conversation:

http://news.cnet.com/Study-Wikipedia-as-accurate-as-Britannica/2100-1038_3-5997332.html#ixzz10Ag4BLz8)

Mechanical peers and false perceptions: the Twitter revolution

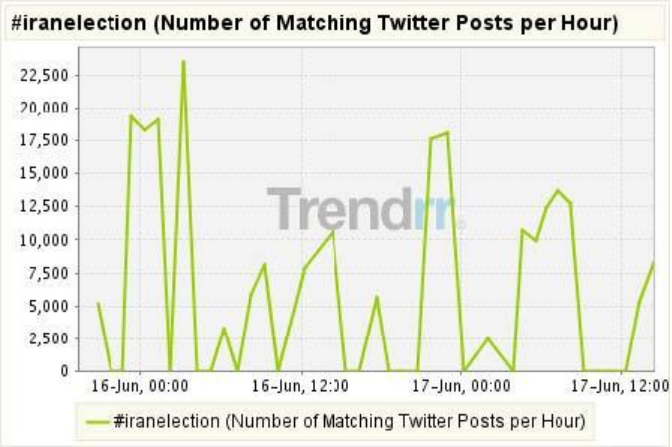
The so-called "Twitter revolution" of Iran provides an example where there is no community or central node that could generate common knowledge. In lack of this the perceptions of who is and who is not a "peer" are confuse; many participants will rely on the simple fact that they have an active profile – I call this mechanical peerness, and contrast it with minimal membership *in a community* rather than being a client of a service. In turn, this false perception of the relevance of mechanical membership leads to general paranoia and a remarkably ineffective information economy that might even have the power – at least in such high profile cases – to distort media perceptions of events and in some cases cause more disturbances than tools for coordination.

On June 16th, 2009 I checked Twitter for new "trends" (as they call hot topics). As a researcher, trying to keep up with happenings all over the internet, there are a number of places to go to and a number of strategies to follow. One of my strategies is to check certain services regularly – about every two weeks. If I check Twitter a week later, not to mention two weeks later, I would have missed "the revolution" (though not its echo in the media). But there I was, at the very beginning, glued to the screen for almost every second during the next ten days (Twitter time is measured in seconds, not minutes – as Facebook time --, not to mention hours or even days for blogs).

Twitter does not have an organized archive or time-limited search, it is notoriously difficult to reconstruct Twitter events (see on this Zuckerman). Google started indexing Twitter in February 2010, and offering search within predefined time-limits, however, the Twitter-events in question happened about six months earlier. Suprisingly, not even a broad selection of tweets survived beyond a handful taken up by the media. I, too, was far too preoccupied with what was going on to find my way around Twitter and start archiving all the tweets at given hashtags. As long as a researcher group, with sufficient data-mining capabilities and full cooperation from Twitter decides to reconstruct the events, the Twitter Revolution of Iran cannot be fully analysed.

On the 17th of June Mashable – the most reliable source for social media happenings -- published first statistical view of the activities related to the mass protests following the

Iranian elections on June 12th, based on Trendrr (a B2B monitoring service of social media – the price for a researcher is prohibiting, starting with 600 USD a month). According the Trendrrnumbers, #IranElection received 221,744 Tweets per hour at peak – the U.S. government at this point (famously) asked Twitter to reschedule its maintenance operations so that tweets coming from Iran could get through. "#IranElection has been a top trending topic for days, just as



terms like Iran, Tehran, Ahmadinejad, and Mousavi. But while there have been 10,000 to 50,000 tweets at any hour mentioning "Iran", it peaked yesterday at 221,744. This seems extreme, but it makes sense when you realize that it corresponds with when Twitter's downtime was rescheduled, which had major buzz the entire day." (http://mashable.com/2009/06/17/iranelection-crisis-numbers/). Two weeks later Mashable published more reliable statistics by the *Web Ecology Project*.

The report also examined channels other than #iranelection and found that only part of the traffic went on to this hashtag, the actual numbers are far higher. The report also states that

- From June 7th till June 26th, the study recorded **2,024,166 tweets about Iran**

- An estimated **480,000 Twitter users** contributed to the conversation

- Of those that Tweeted about Iran, **59.3% tweeted once** – this accounted for 14.1% of the Tweets

- The top 10% of Iran Twitterers **accounted for 65.5% of the Tweets**

– **1 in 4 Tweets about Iran** were retweets

WEP also identified the 100 most prolific contributors (I only include here the names of the first 25:

DominiqueRdr - 2817
erections - 2391
Flowersophy - 2263
oxfordgirl - 2172
Dputamadre - 1400
Tymlee - 1286
WOTN - 1285
Katrinskaya - 1233
iran88 - 1230
MoraJamesLaw - 1194

anotherside - 1097
schachin - 1097
christmasfairie - 1087
ShakeyGoat - 1074
sp4rrowh4wk - 1058
zozizz - 1054
AdrienneVergara - 1042
Rezaliteit - 1023
iran_09 - 1001
thetilo - 990
ThinkIran - 972
m47713 - 958
scarletphlox - 941
irancomment - 929
ahuramazda - 921
PulseSearch - 911
loreleisigma - 901
magnolia_tree - 895
IranRiggedElect - 890
tweetstoday - 868

Furthermore, WEP retrieved the most commonly cited IP-s. I know (from observing the discussions) that most of these were either internet gateways that allowed to anonymize IP addresses or copies of sites that were removed from the Iranian web (such as a mirror of Mousavi`s website). Only one of the top five IP-s is accessible as of 7th October 2010 (PlanetLab).

The most cited sources, however, show a different ranking. However, we must be aware that many users on the channels asked to remove the handle before retweeting the message so this might not represent the true picture:

RT @persiankiwi - 12584
RT @StopAhmadi - 7144
RT @oxfordgirl - 7085
RT @BreakingNews - 5907
RT @cnnbrk - 3828
RT @mashable – 3354
RT @IranRiggedElect - 2948
RT @TehranBureau - 2945
RT @Change_for_Iran - 2354
RT @AnnCurry - 2291
RT @mousavi1388 - 2283
RT @stephenfry - 2206
RT @ProtesterHelp - 2070
RT @Alyssa_Milano - 1951
RT @iran09 - 1923
RT @jimsciuttoABC - 1838
RT @lotfan - 1819
RT @LaraABCNews - 1813
RT @Jason_Pollock - 1313
RT @IranElection09 - 1298
RT @tweetmeme - 1272
RT @austinheap - 1200
RT @madyar - 1185
RT @iranbaan - 1073
RT @allahpundit - 1020
RT @judyrey – 1013

Some posts on other sites retained some of the messages posted across these channels. The most frequently cited page was http://helpiranelection.com/, setup in haste for twitter users to

change their profile picture or color it green, honoring the green revolution. A similar resource, http://iran.greenthumbnails.com, served the same purpose but it was by now removed.

Another frequently cited webpage was

http://www.petitionspot.com/petitions/omidadvocatescom/ where people could sign a petition addressed to the United Nations Human Rights Council. The petition is dated 22nd June and received 15500 individual signatures; about twice the number it was mentioned on Twitter. Twitition, another petition creating site – designed for Twitter – demanded that Google Earth regularly update its pictures of Iran and Tehran so that movements in the streets could be more easily followed. As of 9th October 2010 it received 7261 twitter signatures (http://twitition.com/csfeo). The same petition was created for non-twitter users on http://www.petitionspot.com/petitions/irangooglemap/, receiving 8319 signatures (many of which are unverified by email).

All of the above sites are in English. One additional site offered service to twitter anonymously.

The *least frequent reference* was http://gr88.tumblr.com/, receiving 2059 mentions. It directed the user to a page with information in Farsi and English on such mundane issues as to how to administer first aid, what to do with pepper spray, how to help someone with emotional shock.

This was meant to be a node to create a central reference point and thereby common knowledge regarding how to use information posted on Twitter. However, due to the structural characteristics of Twitter, it could not emerge as a central guideline or "principles" – the kind that we are going to see on Ebay or Wikipedia. The main prerequisites were missing: the common knowledge of the fact that there is such a node, and the structure that would allow peers to find this node.

It stated:

HOW NON-IRANIANS CAN HELP: TWITTER

- Change your location and time zone on Twitter to Tehran, Iran (that's GMT+3:30). - Change your profile icon to green in some way. - Set up a proxy and send a DM to @ProtesterHelp. - DO **NOT** retweet posts verbatim from Iran. This puts the users at risk. The Iranian Minstry of the Interior is watching Twitter closely now. Don't use names and reword the post. - Submit e-mails to CNN, MSNBC, Fox and other news sources about the Iranian Revolution; demand more coverage. - DO **NOT** DDOS (PageReload) Iranian government websites. It slows all Iranian traffic, doing more harm than good in this information war.

The site had – to date – 45588 visitors. Within twitter, it was mostly reposted from #gr88 – a hashtag on Twitter that does not exist anymore. Soon it became obvious that changing the

time-zone did no good in obfuscating the geographical origins of tweets for the basij, however, it did make identifying reliable sources more difficult for ordinary twitterers.

I first entered #iranelection on 16th June, while also checking for #iranelections. It was obvious that #iranelection had mostly an international audience and very few posters who seemed to know anything about what was going on in Tehran and other cities in Iran. Most tweets expressed sympathy and fellow feeling or containted exhortations, prayers, and other emotional expressions. Many came from young Americans but middle age Americans were also present. After the green thumb idea started spreading, most of those contributing changed or colored their picture green. This was possible because green profiles were highly visible in contrast to nodes that could have and should have provide different and more useful information.

I was a passive observer – if I follow back my trail, I see that I posted only a handful of messages from 16th to 30th June.

I had no original contribution, only retweeted tweets that made sense to me. My second RT (on 20th June) is a reference to a blog by a Persian woman that contained – or so I thought – useful information and warnings for the buzzing Western audience of the green revolution. The page was updated on 17th June, showing clearly all problems with the twitterized revolution. Despite my (admittedly meager) attempt, it did not become viral – just as the above page, this page was simply not visible enough to be perceived as a central node, therefore it could not create common knowledge even if individuals read it and referred to it. As the contents did not become common knowledge, the good advice it offered held no sway. It still exists and states the following:

Iran Elections & Twitter

This will assist you in being involved in Twitter and how to behave there. It's important to read this so you don't make mistakes. **Twitter Hashtags #iranelection #gr88** It is imperative that ACCURATE and verified information gets out from Iran. You can help by doing the following: DO NOT RT (retweet) ANYTHING to do with any of the Iranian Tweets, and especially DO NOT mention any of the trusted names/sources. Do not tweet anything that is not VERIFIED by one of the trusted sources. There are now trusted sources in Iran and trusted people on the outside who are working tirelessly to assist those sources and to verify links and information. **FOLLOW ONLY TRUSTED SOURCES** There are many government agents now on Twitter. At first their posts seem credible, but in reality, they want you to follow them, and once they have a decent following, they'll start spreading lies and pro-Ahmadinejad propaganda. **DON'T USE A TWITTER STREAM FROM #iranelection OR #gr88** Use any twitter client where you can set only those you follow, or where you can enter multiple searches for those user names you want to follow. That way you can avoid the hundreds of

people who are posting in the Iran related hashes (#) just for the hell of it, for nefarious purposes, or simply posting and reposting misinformation. **KEEP LOOKING AT THIS PAGE** This page lists known and suspected fake Twitter IDs, who are posting on the vital hashes (#iranelection, #gr88). To avoid huge streams of misinformation, just follow trusted sources. These are people well known to those who've been on twitter since the beginning of the Iran Election. We can no longer tell you who they are for security reasons. If you know who the trusted sources are, DO NOT advertise it in any Twitter message, or anywhere else. **WHAT CAN BE BLOCKED FROM TWITTER** While Twitter itself and most other sites are blocked from Iran, some very clever and resourceful people in Iran know how to get around it. Once they're around the blocks, EVERYTHING on Twitter is available to them. Hashes can't be blocked. User names can't be blocked. **CHANGE YOUR LOCATION in Twitter and DON'T ADVERTISE IT!** Most people on Twitter now know to change their location to Tehran, Iran with the Tehran time-zone, but PLEASE DON'T ADVERTISE IT. Anyone looking for fake geolocations can easily go back through your posts and see, "I'm now posting from Iran", or "I've now changed my location". It's total stupidity to advertise - you're just making it known that you changed your location, curtailing the government's search so they can quickly eliminate you from the real posters in Iran. **USE COMMON SENSE, KNOW WHAT YOU'RE TALKING ABOUT** Many of the people following the Twitters from Iran, are not Iranian. **Please don't assume anything about what they really want for THEIR regime.** You may think that total democracy as in the USA is desirable, for them, but don't assume you know what they want. Derogatory comments about Islam or about any other deeply-rooted religious and/or cultural practices in Iran only serves to fuel the anti-USA and other anti-Western World sentiment that is drummed into them. If you want to know more about Iranian culture, there are plenty of places on the Internet you can learn. The Iranian people are good, kind, generous and loving people with a very long history. They generally do not reflect their government's views. Having said that, don't assume they all want the moral freedoms we have. Some do, some don't. Even in a totally free and democratic Iran, you will still see some people in veils who are deeply religious, just like you'll see people f all religious persuasions in the west. Any rude comments about Islam or about Iranian culture will only fuel the government's anti-western sentiment and will insult those people in Iran who who have beliefs other than yours. Not all in Iran are religious, but please respect those who are. Don't forget that the basis of the current problem revolves around **the election and the cheating that took place**. That is the **primary issue** and remains so. The goal of the protesters is to have a fair election. They didn't get that. Anything else you think they want, can be a false assumption on your part. Like anywhere in the world, in Iran there are opposing views of cultural and religious practices. Don't assume that government agents will or won't do something. They can be brutal. If you think that they won't do something based on common sense human rights violations, think again. Remember, they've had 30 years of an oppressive regime - time enough for young children to be brainwashed, time enough for some people to submit to the government's will and promote it. Please use common sense and **don't assume anything** unless you really know better! Most of all, think twice before you post ANYTHING that you think is fact to any of the Iran Election twitter hashes, or to any part of Twitter for that matter. You may well be putting someone else life in danger.

If you like this article, please Tweet to #iranelection and/or link to the location so more people can read it! The tweet button below is general and won't tweet to any hash-tags.

The page only received 412 retweets. The blacklist of possibly fake identities or government agents – a page that was soon publicized in The Lede of The New York Times – fared somewhat better. As it shows clearly what people who had some sense were afraid of, and also some of the paranoia characterizing popular hashtags, is the following:

Fake Iran election Tweeters

June 17th, 2009

The tweeters shown below are possible fakes accounts and may have connections to the Iranian Security apparatus. Do not re-tweet anything from these accounts. You can block them using the link attached below.

Please also check Trolls & SPAM for other accounts.

Obvious Disinfo

 http://twitter.com/Persian_Guy (Using fake RT to spread disinfo)

 https://twitter.com/AliMarboushi (Fake headlines used to spread disinfo)

 http://twitter.com/eyeranprotestr (troll spouting the official govt line)

 http://twitter.com/revolutionarian (Sending out fake first aid information)

 http://twitter.com/Jimmietime (Spreading false information about Intl. Embassies in Tehran) **NEW!**

 http://twitter.com/demian888 (Promoting killing of "Basiji", which is currently law enforcement) **NEW!**

 http://twitter.com/psf14tc (Looks like this is an obvious agent)

 http://twitter.com/EyeRanElection (Looks like this is an obvious agent)

 https://twitter.com/watchingiranian (Spouting anti-semetic garbage)

 http://twitter.com/THRONCOMMERCIAL (Using the Iran tag to spam)

 http://twitter.com/EranSpahbod (preaching attack and violence)

 http://twitter.com/AhmediNejThief (Re-tweeting Persian_Guy's tweets only)

 http://twitter.com/AhmediNejSucks (Copycat account ofAhmediNejThief)

 http://twitter.com/AhmediNejScum (Copycat account ofAhmediNejThief)

 http://twitter.com/AhmediNejFucked (Copycat account ofAhmediNejThief)

 http://twitter.com/AhmediNejLiar (Copycat account ofAhmediNejThief)

 http://twitter.com/AhmediNejRaped (Copycat account ofAhmediNejThief)

 http://twitter.com/serv_ (posing fake RTs; disinfo)

 http://twitter.com/twitrevolution (Suggesting violence towards police and blocking of roads; such actions are likely arrestable. Either provocateur or someone really violent)

In a comment on this page – despite the above and several similar warnings -- @persiankiwi was named as one of the trusted sources. The – common sense – proposition that one should not turn the spotlight on trusted sources could simply be ignored – another example of how a

lack of central guidelines affects internet communication. In turn, the lack of structure that would allow some verification created widespread paranoia. @persiankiwi soon disappeared after June 17th, so much so that many of his/her/their followers became worried. @oxfordgirl, after getting several emails as to what happened to @persiankiwi, and another tweet stream coming presumably from Iran, @Change_for_Iran, published a reassuring message that they are both living.

In retrospect, it is much easier to identify knowledgable Iranian tweeters but at the time, with thousands of messages coming to #iranelection, many of them retweets, it was extremely difficult to find any valuable information. This did not seem to disturb the general audience who felt they were part of the green revolution, if only by sentiment, and occasionally reposted messages that turned out to be false. At one point around the 20th someone announced that Iranian posters should move to #gr88 to block unwanted traffic. However, this message was retweeted just as often as others, and many posters simply added #gr88 to the hashtags s/he was posting to. Some desperate people – I remember a Swedish pair of bothers – set up streaming news in a flash format on a freshly created site. They only included sources they deemed as trustworthy although, of course, they could not offer an explanation how they assessed their trustworthiness.

My strategy was to follow @madyar, an Iranian human rights activist (group) who posted both in English and in Farsi. I overlooked @oxfordgirl who was, probably, the most prolific reliable source who could verify the identity of tweeters inside Iran. @persiankiwi and @Change_for_Iran posted only for a week within the two weeks I followed all tweets (as much as possible).

As they stopped tweeting, I could retrieve some of their tweets. @persiankiwi last tweets were the following:

> Allah - you are the creator of all and all must return to you - Allah Akbar - #Iranelection Sea of Green 8:39 AM Jun 24th, 2009 via web
>
> thank you ppls 4 supporting Sea of Green - pls remember always our martyrs - Allah Akbar - Allah Akbar - Allah Akbar #Iranelection 8:36 AM Jun 24th, 2009 via web

we must go - dont know when we can get internet - they take 1 of us, they will torture and get names - now we must move fast - #Iranelection 8:34 AM Jun 24th, 2009 via web

Everybody is under arrest & cant move - Mousavi - Karroubi even rumour Khatami is in house guard - #Iranelection - 8:28 AM Jun 24th, 2009 via web

they pull away the dead into trucks - like factory - no human can do this - we beg Allah for save us - #Iranelection 8:23 AM Jun 24th, 2009 via web

Lalezar Sq is same as Baharestan - unbelevable - ppls murdered everywhere - #Iranelection 8:19 AM Jun 24th, 2009 via web

they catch ppl with mobile - so many killed today - so many injured - Allah Akbar - they take one of us - #Iranelection 8:18 AM Jun 24th, 2009 via web

in Baharestan we saw militia with axe choping ppl like meat - blood everywhere - like butcher - Allah Akbar - #Iranelection RT RT RT 8:16 AM Jun 24th, 2009 via web

reports of street fighting in Vanak Sq, Tajrish sq, Azadi Sq - now - #Iranelection - Sea of Green - Allah Akbar 8:14 AM Jun 24th, 2009 via web

rumour they are tracking high use of phone lines to find internet users - must move from here now - #Iranelection 8:09 AM Jun 24th, 2009 via web

phone line was cut and we lost internet - #Iranelection - getting more difficult to log into net - #Iranelection 8:05 AM Jun 24th, 2009 via web

all shops was closed - nowhere to go - they follow ppls with helicopters - smoke and fire is everywhere #Iranelection 7:03 AM Jun 24th, 2009 via web

ppl run into alleys and militia standing there waiting - from 2 sides they attack ppl in middle of alleys #Iranelection 7:01 AM Jun 24th, 2009 via web

so many ppl arrested - young & old - they take ppl away - #Iranelection - we lose our group 6:59 AM Jun 24th, 2009 via web

saw 7/8 militia beating one woman with baton on ground - she had no defense nothing - #Iranelection sure that she is dead 6:55 AM Jun 24th, 2009 via web

they were waiting for us - they all have guns and riot uniforms - it was like a mouse trap - ppl being shot like animals #Iranelection 6:53 AM Jun 24th, 2009 via web

I see many ppl with broken arms/legs/heads - blood everywhere - pepper gas like war - #Iranelection 6:35 AM Jun 24th, 2009 via web

just in from Baharestan Sq - situation today is terrible - they beat the ppls like animals - #Iranelection RT RT RT 6:34 AM Jun 24th, 2009 via web

Larijani pressing for Mousavi to be given airtime on IRIB to discuss elections #Iranelection RT RT RT - tahlilerooz.ir 2:15 PM Jun 23rd, 2009 via web

MOUSAVi - on his wesite - Wed Sea of Green is 100% confirmed - no cancellation will be made #Iranelection RT RT RT 2:12 PM Jun 23rd, 2009 via web

Persiankiwi might have become the most followed tweeter because s/he posted on @iranelection (the first stop for all who wanted a look at the green revolution). However, it was also @persiankiwi who provided posts with "confirmed" or "to be confirmed", drawing (some) attention to the fact that information concerning happenings on the ground should be verified. This in itself raised his\her contributions above other posters even though there was no way to tell if his/her confirmations were any better than a guess by anyone on the ground. For a rational satisficing person – as I try to see myself – this was the most one could achieve, using Iranian sources outside Iran to confirm what @persiankiwi confirmed inside. By December @persiankiwi disappeared from Twitter, reappearing as _persiankiwi_Ropudan on 10th December, warning that green tweeter profiles are being hacked by the government and should not be followed. The same day an @persiankiwi_ also appeared. The new accounts were active only until 22nd of December. It is difficult to establish if this was misinformation or vital information. People were skeptical.

Several Iranian tweeters, supporters of the green movement outside Iran, had exchanges with the new identity:

think _persiankiwi_ is also confused just like Karroubi, his son & d rest. His account was eaten by d basij, or may be not? hmm#iranelection

January 25 from Twitter - Comment - Like - Share

@__persiankiwi__ no messages have gone out from your original account since June. Sorry! hard to believe.#iranelection

January 25 from Twitter - Comment - Like - Share

@__persiankiwi__ you are not the same persiankiwi. U r a fake. #iranelection I checked u out.

January 25 from Twitter - Comment - Like - Share

In the first two weeks – after the 20th of June – it was fairly easy to identify posts coming from official Iran by typical mistakes in grammar, and also a rather rough tone – when these supporters of Ahmaninejad joined the channels they did not try to hide their identity. The

above case is different. Only people who followed closely the original @persiankiwi could detect some strange facts – such as the claim that the account was hijacked even though it did not post tweets after the tweets quoted above. It was also strange that the new persiankiwi listed three channels – two of which exists to this day – as basij, even though they are Iranian sources outside Iran. Another reason for suspicion was that the original persiankiwi had a link to Mousavi`s Facebook account as his/her profile while the new identities did not. And finally, as seen above, @persiankiwi was very religious, often invoking Allah, while the new persiankiwis did not do so. So it is fairly safe to conclude that the new persiankiwi is not the same as the original – however, it is far from sure that s/he is an Iranian government agent.

But who took such pains when every second several posts appeared at #iranelections? Filtering information in this setting was extremely difficult. I can recall a few contested issues on #iranelection. An important thread was the role of the US – whether Obama should issue a statement. Many Iranians demanded that he do so while others warned that interference from a foreign power will diminish the credibility of the green movement in the eyes of Iranians (as the government media tried to emphasize repeatedly that protesters are puppets of the enemies of Iran). Another contested issue was whether call for action in the UN or in countries that have embassies in Iran. During the first crackdown many tweets revolved around safe havens, hospitals and embassies nor receiving the wounded. Some Canadians started a campaign to demand the Canadian embassy to open their doors to those wounded who did not dare visit Iranian hospitals. Citizens from other countries followed suite. A Canadian blogger`s post sums up nicely the situation:

> Last night, there were numerous tweets about foreign embassies accepting injured Iranian protesters and how protesters should not go to public hospitals since the Basij were rumored to be seeking out injured at hospitals.
>
> There was A LOT of crap going back and forth about whether or not the Canadian Embassy was accepting injured Iranians and what was really pissing me off was that people were RT [retweeting] information that they hadn't checked out themselves. It seemed that everyone was jumping on the RT bandwagon and picking things that were the most inflammatory and they didn't care if what they were sending out on Twitter was true or not. I received a reply from someone saying that they had personally contacted Ottawa emergency embassy line and that they had been informed that the embassy would be open and accepting the injured. When I tweeted that, I got several replies asking me to confirm. Well, truth be told, I couldn't confirm since I wasn't the first source. So, I brought my cell phone to bed with me and contacted the Ottawa emergency line myself. [Sorry, Tucker. I'll pay the international charges.] The guy I spoke with was VERY nice and helpful and assured me that the Embassy would be open tomorrow [today] but that they would only accept Canadian

citizens. He then took down my information and said that he would put me in contact with their Media Affairs liaison. Gotta love working for "the press".

Almost instantly, I received an email from Simone MacAndrew asking me what questions I had pertaining to Iran. I asked her to confirm if the Canadian Embassy was accepting just Canadian injured or if the Canadian Embassy was accepting ALL injured protesters. That all was last night. I felt like an ass for leaving everyone without a definitive answer but I couldn't do anything else until I had a confirmation/denial from Simone. The official statement came just a few minutes ago:

Reports on Saturday that the Canadian Embassy in Iran was turning away people seeking sanctuary are false. The Embassy was closed Saturday and there were no Canadians at the Embassy when the protests began. Reports that we were providing shelter to Iranian demonstrators are also false.

Canada's Embassy is located in the centre of recent demonstrations. Due to the tense security in Tehran this week, the embassy has been closing early so that staff can return home safely before the public and democratic demonstrations begin.

Canada continues to call for the protection of civilians and their rights. As the Prime Minister recently stated, "We encourage those authorities to respect people's basic human rights and to move forward on democratic progress in that country."

Canada does not offer asylum to individuals in its embassies abroad. However, in exceptional cases where an individual is in the embassy and seeks temporary refuge because of an immediate threat of injury or death, temporary safe haven has, in some instances and for humanitarian reasons, been provided.

Foreign Affairs and International Trade Canada, including the Canadian Embassy in Tehran, continues to provide consular assistance to Canadian citizens in-person, on the phone and through email. In case of emergency consular assistance, Canadians should contact the Embassy of Canada in Tehran at 98 (21) 8152-0000 or DFAIT's Emergency

Operations Centre by calling collect to 613-996-8885 or by sending an email to sos@international.gc.ca.

Many critics pointed out later that the very fact that most posts were in English was and should have been and obvious to participants and proved that Twitter played no part in the coordination of movements on the ground. They go as far as to say Twitter channels exhibited a mock-revolution for a naïve American audience. Milder critics state the Twitter phenomenon was mainly for publicity – drawing attention to the events and eliciting media response.

As an observer, I doubt this was the case. As the example of the Canadian embassy shows, *some* information coming from outside sources might have helped people on the ground if they could pass it on. Also, Iranian organizations and individuals outside Iran helped those inside by establishing proxies and passing them on (through private channels) to those on the ground. When mobile communication was made difficult, or people suspected that their messages are intercepted, online communication – such as checking blogs and Mousavi`s website – became more important, and Twitter served as a channel to turn people to such central nodes.

Still, it is obvious that the stream of posts on Twitter – as opposed to the Facebook page of Mousavi that was a central reference point -- could not effectively create common knowledge. It was mostly effective in creating visual symbols through changing profile pictures.

It is interesting to compare two visual representations of the movement. A very interesting and often ignored part was played by Youtube where uploaded videos were regularly posted in tweets. The Neda videos, showing a young woman being shot in the chest by a sniper and bleeding to death before our very eyes (as seen through three separate mobile video shots) played a special part. Iranian (and in general Shiite) culture emphasizes martyrdom and the 79 Islam Revolution started, similarly, with a protest at a funeral of a student killed by the Shah`s police. Youtube videos and frames taken from them could be accessed from Iran and after the 21st (Neda died on the 20th) pictures with the iconic bleeding face appeared among protesters in Iran. This is clearly a case where Twitter had an important impact beyond the Western audience for whom it provided the sentimental human-interest part of the story – a victim with a face and a name.

The symbol of Neda was useful in a number of ways, yet it could not provide a key information (and it was this type of information that eventually lead to the petering out of the revolution). It did not provide any information on *how many* people supported the cause.

Neda – whose blood streaked face was immediately taken up and used as profile picture by many green supporters – could become a common rallying point because it provided a central name, supported by the reference embodied in profiles. Contrast this with another important phenomenon and form of criticism on the ground.

@persiankiwi never mentions Neda but s/he does invoke Allah several times. This – beyond persiankiwi being religious – was another indication of using the alphabet of the Islam revolution and inserting it into the language of the green movement. Khomeini supporters in 79 regularly climbed up the roof of their houses and chanted Allah Akbar through the night. Now – in tweets and in other channels – Iranian green activists called for the same sign of support. Hundreds of videos were uploaded to Youtube showing night rooftops with people chanting Allah Akbar (and occasionally also "death to the dictator"). People on the ground often mentioned that they hear or heard all night Allah Akbar, and well after the Western media attention waned (and Twitter turned to Michael Jackson and his mysterious death), Allah Akbar as a form of protest went on in Iran. Chanting Allah Akbar is a clear and easy way to express support for the green movement – there is no way to misinterpret or misunderstand this – while also experiencing the degree of support from others. As few people can actually see beyond the next few rooftops, Youtube movies showing rooftops from other parts of Tehran, or other cities, could serve as an aggregator of these signals. In 2009, Youtube had 706 videos uploaded about people shouting Allah Akbar. For 2010, there are 467 such videos.

In the Twitter stream it was often mentioned that people are shouting Allah Akbar. Yet it never became clear to the Western audience that Allah Akbar was probably the most important piece of common knowledge on the ground. The Western media projected Neda back who thereby – using the Western media as a central node – became more important than the already existing Iranian symbol of protest that could have been – and probably was – more effective in signaling the degree of support on the ground (as opposed to references to Neda, Allah Akbar chants cannot be forbidden or censured).

For a conclusion, I wish to examine this case from the prespective of my general argument. What differentiates Twitter and tweets from text messages is their very public nature. Although SMS communication is an effective tool in organizing mass rallies – the first example for this was perhaps the orange revolution in the Ukraine – it is also a private channel. SMS travels from person to person, through strong and therefore trusted ties. Twitter is a very different environment even though it was conceived as SMS for the web. Twitter culture by 2009 was transformed into a news channel where users could subscribe to anyone they wanted to

"follow" and celebrities, politicians, news agencies, businesses and, of course, spammers started Twitter channels to reach millions of fans. What was meant first as a friend-to-friends news service, accessibly by mobile phones, turned into a chaotic news site where trivial messages are posted by the thousands every second. A friend-to-friends service would emphasize strong ties, however, user preferred their mobile phones, their personal blogs and Facebook for such communications. Twitter is a service where typically a few star nodes communicate with millions of small nodes in a communication network. Twitter has a high retention rate – 40 percent of new users return and keep using the service – and it is regarded as a public barometer of popular sentiment and "buzz". It is easy for a Twitter user to feel they are part of the great trends that form and transform the world as important. The Library of Congress even decided to archive all Twitter content – as if stressing the importance of the ephemeral, of capturing the fleeting moment. For the hundreds of thousands who visited #iranelection or #neda, this mechanical form of structural equivalence within a very narrow time window gave the sense of being part of the tide. They were, as far as Twitter goes, but this, of course, did not mean they were also part of a revolution taking place in a country far away. When it comes to real life events, purely mechanical structural equivalence – having a Twitter profile and posting messages in to a certain channel -- in the information economy creates false hopes and false trust in the perception of what is going on. This problem, however, is not exclusively a problem of new media channels.

Gossip distorts events as much as tweets obscure them and any movement can be misinterpreted by foreigners with the best of intentions (as it happened with the Ukraine revolution where Western liberals celebrated politicians who turned out to be just as oppressive as the ones they replaced). New media, if unchecked, is not more than an enourmous gossip network. The reason why I emphasized above structured communication, whether based on loosely defined principles or cohesive groups is that these serve as counterbalance to this gossip network. It is first principles and other members who provide the necessary guidelines for establishing reputations and a reputation-based trust system.

Internet identity risks

> "The biggest mistake people make is that they allow anonymity. You won't make business with someone you don't know. We want to create a community without anonymity, a news service that fosters civil discussion, a civil dialogue. We will not have comments as they usually contain worthless insults. We won't even have articles, only an ongoing conversation concerning issues that are important to the community."

(Techchrunch interview with Pierre Omidyar, 2010 March 20th on his new project, a community news site for Hawai; http://techcrunch.com/2010/03/20/pierre-omidyar-on-ebay-and-pez-dispensers-leaving-the-valley-and-the-most-important-thing-he's-ever-done/)

According to Patricia Wallace (1999) the most frequently asked question on internet communication channels such as IRC was MOF? (Male or Female?) and Age?. She also found that most screen names (user names, nicknames) represent their user's real life or personality to some extent – including birth of date, alluding to famous cultural character (we'll see below a "Lady Arwen") from the subculture that they belonged to and more often than not make reference to their gender as well.

Online identity can be many things in various settings and it would be a mistake to overgeneralize from, say, IRC communication norms, the significance of MSN profiles and the fact that anonymity (or having "new nicks") is costly on eBay. However, I will argue that despite the famous New Yorker cartoon by Peter Steiner (On The Internet Nobody Knows You're a Dog, July 2002 issue), anonymity (or misrepresentation of the self) hurts the cheater more often than its interlocutors.

There are very famous exceptions to this rule, echoed by the media throughout the world, some even leading to trial and manslaughter charges. Online harassment is a serious issue but it is not so very different from offline harassment – although anonymity often allows the per-petrator to get away with it. However, in most cases of online communication people tend to form close clusters. Even though it would be theoretically possible to have thousands of peo-ple posting to the same internet forum or message board, in fact the number who regularly contribute to a given channel is much smaller. In general discussion forums (that is where people gather to talk, rather than to ask advice on a specific problem) in Hungary, the number of people who contribute to the discussion is 6-20, and usually closer to 6 than to 20. Of course there are so-called "lurkers" who do not contribute only read and their number is much harder to assess. In such a close community, a new nick encounters some hostility, es-pecially if it (he/she) interferes with the conversation.

For many services anonymity is a cherished asset – especially places where users express opinions on sensitive topics or offer sensitive information such as sexual preferences –, their users are not willing to give up privacy in exchange for convenience or trustworthiness. However, in such services new nicks (handles, internet identities) without an established history are treated as pariah until they gain some informal reputation based on the history of their interactions.

Such services, especially in the early phases, had encountered typical problems with bullies who should be differentiated from trolls (internet lingo). Strangely, in the famous cases of cyberbullies (as detailed below in the section on tribes), bullies (their online personae) are regarded as members and breaching trust as a member is what provokes a crisis. What it means is that online bullies in communities do have identities – they are not anonymous, they have peer membership that requires observance of some minimal norms. In many cases their real identity is revealed (and acknowledged) during the resolution phase of the process. A French blogger, commenting on a famous "internet rape" case -- where in a virtual world called Palace a user hijacked another user's avatar and forced it to perform sexual acts -- claims that there is no real community until members of a service encounter such a crisis, go through "collective effervescence" and cooperate to solve it (http://www.psyetgeek.com/vous-ntes-pas-une-communaut-si). This cooperation feature, or a form of grassroots democracy, leads us again to the problem of common knowledge within the settings of a minimal membership community. Some norms become common knowledge – formed and publicized – only during a crisis. In order for a minimal peer community to create norms, communication and a central information hub – where norms become formulated and fixed – are indispensable features. In some services these information hubs are provided by service operators; in some cases crises compel service operators or senior members to create such information hubs that serve as sources of common knowledge of norms.

Trolls on the other hand are anonymous users whose sole intention is to disturb the community or disrupt its operations. They often change their user names and if allowed remain completely anonymous (any post will appear as posted by Anonymous). Trolls are dealt with in a very different way from what I described above concerning cyberbullies. The mechanics of catching and blocking trolls is usually run by administrators or moderators and often they use scripts or automatic agents (bots) to track troll behavior. The community is involved not in dealing with a troll but in expressing their opinions concerning the mechanics of blocking trolls. There is, of course, the ever returning problem of some users "feeding trolls" – that is,

instead of ignoring them (which is usually the community rule) they engage in flame wars with trolls, thereby helping them disrupt the normal operation of the service. But whether successful in creating flame wars, or not, trolls do not have membership, neither are recognized as peers – they only have typical actions. There are known cases though when contributors have one name for contributions and several other "ad hoc" names for trolling. This supports the argument that minimal membership, under the conditions of anonymity, is not a barrier to form reputations, based on interaction history or contributions. It is the *lack* of history that leads to the situation where membership is neither claimed, nor accepted.

Identity on the internet has another aspect as well. From the early days on, attempts were made to create a single-sign-on service that would identify an online identity throughout the web. The OpenID project was formed as a distributed authentication service. You could register with OpenID providers (note: you registered your online identity and not your IRL identity) and then used your OpenID to sign on in services that accepted OpenID. This was meant as a provision of a secure and fast process (instead of registering everywhere, you simply use your existing ID), however, it had the important consequence of having and maintaining and online identity across services. Of course, abandoning or losing it meant starting anew in all services where that ID was used.

OpenID was first developed for LiveJournal (an early but still popular social networking service) in 2005 and in 2007 the OpenId Foundation was established. Popular services – such as Yahoo, Google and several others – joined OpenID as providers (you can use your Google username, for example, to sign on in OVI shop, Nokia's online application store). When these providers joined OpenID, the use of the protocol became popular. However, Facebook started offering a similar service (sign in with your Facebook account) that is becoming wildly popu-lar for services (the obvious reason is that a Facebook account gives much more information on a unique user than a Yahoo user name).

After bloggers and other opinion shapers on the internet gave voice to their misgivings that Facebook wants to replace OpenID, Facebook also joined the OpenID community. (The Foundation has now on its board Facebook, Google, Yahoo, Verisign and other big players in the industry). OpenID (and Facebook) now includes ID-providers such as Google, Yahoo, LinkedIn or Facebook: you can use your accounts or names registered under these services to check in on other services that accept the providers' OpenID service.

But now Facebook wants to take another step, towards "making everything social". This is what Mark Zuckerberg (whom bloggers dub nowadays "Zuckerborg" because of his social

awkwardness and geek style) said on September 22nd in an interview given to TechCrunch (http://techcrunch.com/2010/09/22/zuckerberg-interview-facebook-phone/):

> "One thing that I think is really important — that I think is context for this, is that I generally think that most other companies now are undervaluing how important social integration is. Right, so even the companies that are starting to come around to thinking, 'oh maybe we should do some social stuff', I still think a lot of them are only thinking about it on a surface layer, where it's like "OK, I have my product, maybe I'll add two or three social features and we'll check that box". That's not what social is. Social is. You have to design it in from the ground up. These experiences like what Zynga is doing or what a company like Quora is doing, I think that they have just a really good social integration. **They've designed their whole product around the idea that your friends will be here with you. Everyone has a real identity for themselves (my emphasis EB).** And those are fundamental building blocks."

Zuckerberg is referring to Google in the first paragraph that – although it does offer single sign-on – never really understood the appeal of social applications. Google is probably the single company now in the top ten internet applications that does not emphasize community and never did so.

In March 2010 NIH (National Institute of Health) started a pilot with OpenID, and the Japanese government started accepting OpenID with certain services. OpenID is very different from Facebook and LinkedIn (a business-contact oriented version of social networking) sign-on services as Facebook and LinkedIn users are supposed to submit their real names and it is mostly on this basis that your "friends" will be found (they also use mail-account harvesting features where anyone with an online mail account can submit their contact list to find matches on Facebook and other features, such as offering users you might now but yet not linked to). It is clear that a Facebook identity is not easy to fake (or, at least, social networks are difficult to fake), as long as the user gives his real name or a real-looking-name, or establishes a history that is available to peers. Interestingly, although it is expected that you give your real names, this rule is not enforced. Yet many early college student participants it did not even occur not to register with their real names and this convention is still very strong on Facebook, despite privacy concerns. The explanation is the mechanism of trust in social net-works. Only criminals and trolls have any incentive to register under false but real looking names. The same phenomenon can be observed on iwiw, so much so that members of some government agencies were ordered not to register or delete their accounts as visibility of their social network could compromise the operations of government agencies – such as the police.

It is not surprising therefore that more and more subscription services offer Facebook authentication. Online identity is evolving from "you might as well be a dog" to "we know exactly who you are, given your social network".

Verification of the identity or at least the reputation of the author of a post is becoming more and more important to ensure trust. It is much like the scenario when you ask your friends to recommend a plumber (or a lawyer) instead of looking one up using Google. It makes sense – no amount of anonymous user feedback will give you the same type of guarantee that the person recommended is a decent guy.

It is not surprising therefore that increasingly services offer real-name based social interaction.

The contrast between old crowdsourced "Question – Answer" services and similar new ones is instructive. Yahoo answers – a service where anyone can post a question, receive answers from well-meaning visitors and pick one as the most useful – uses user names (screenames, nicks), and for many similar questions you might receive very different answers depending on what thread you look at. There is no way to verify or even guess the expertise of the user who gave an answer – "best answer" means that the answer was good enough for the person ask-ing the question (this is a satisficing strategy of information seeking, in the sense of Herbert Simon's theory of human information processing). What is more important for my minimal membership argument, peers (here people who look for similar kinds of information) do not have common knowledge of their being peers in this sense. Therefore reputations cannot arise and trust is a weak feature of the service.

I looked at a question asking "when can you start feeding cat food to kittens". There were five similar threads (at least five persons posted this question, although with different wording), and the "best answer" in each five gave different advice.

Quora, a completely new site that provides a very similar service is integrated with Facebook, but seems to draw on other sources as well to identify your interests – with my account, although I registered with my Facebook Connect, the interests I identified on LinkedIn turn up immediately as topics I might want to follow. LinkedIn, of course, can be connected to Facebook if the user wishes so. Techcrunch, the leading blog or rather, by now, news site on technology and the internet, announced that Quora did a better job on getting a (tech-company related) answer than did Techcrunch (by now) professional journalists. Quora does have a question as to how to feed kittens but no answers as yet.

Compare the question-answer services with another information provider service: Wikipedia. Wikipedia does not have an article on feeding kittens, however, it does have several articles on cats, cross-referenced. The main article on cats contains 236 reference, 10 further reading book suggestions and 7 internet resources – clearly, it is better to start with Wikipedia if you are looking for an expert answer. Wikipedia is based on minimal peer membership with publicly available histories of peers and principles that are (or should be) common knowledge (the principles appear below every article).

Of course, there are risks to social network-type trust solutions beyond the uncertain reliability of content. The very fact that social ties are the main source of trust on social networks – communication ties between people who know each other IRL or second or third degree re-moved from the person and can ask the opinion on him/her of the connecting nodes – can be abused easily by hijacking accounts and sending messages as if they came from the person him/herself. It does happen on social network sites but happens much more frequently in email.

Threats to privacy are also a serious concern to some – literature calls social networks a "paradox of privacy" (boyd 2004; 2007; 2008). As we live the age of social software, the risks of using social networking sites are just emerging. The most commonly cited risk is publishing information indiscriminately, especially about the self that can be abused by malicious people – telephone number, address, interests, events one attends etc. It is known that companies look at your profiles and other trails you leave on the internet when deciding whether to grant you an interview. For some, this sounds threatening, especially if they posted damaging information or grudges concerning a previous employer (which companies do not take kind-ly). Despite this many young people choose to show their personal information on their pro-files as showed in a small-scale surveys (Acquisti 2006; Lewis, 2009; Ellison, 2007) and are not too concerned about potential risks. I will argue later that this is not ignorance but strate-gic behavior concerning the tradeoff between disclosure (which attracts more contacts and feeds trust) and privacy. Acquisti develops the concept of "strategic disclosure": users choose carefully the data they use as self-presentation on a social network, based on what kind of ties they wish to form.

IV. The first trust mechanisms online: lessons of Ebay and the Prisoners' Dilemma

The prisoners' dilemma is a hypothetical two-person game in game theory, involving two prisoners, kept isolated, in different cells. What they know is the possible outcomes of their joint behaviour for their respective sentences. If they both deny committing the crime, they get ½ year in prison. If one testifies against the other, the former goes free, the other gets 4. If they both testify (implicating the other), they both get 3 years in prison. Now, it is obvious, that the best outcome for both of them is telling on the other one: you can go free if the other remains silent. The next best option is denial for both. On rational calculation each has a very good reason to think that the other will opt for the best choice available to him – confess and implicate him. On rational calculation alone, a prisoner will surmise that even if he would rather cooperate, the other prisoner might not know this and go for the safest solution, therefore he is bound to be the loser. So for him, the safest solution is the same: to confess. What this means is that they both confess (trying to avoid the risk), therefore they are stuck in prison for 3 years.

PD games are situations where the dominant strategy is defection. The best example of a simple PD game is an online transaction. You have something to sell, I want to buy it. The PD dilemma is who moves first. If I send you the money, you may not send me the item. If you send me the item, I may not send you the money. The end result, predicted by the PD dominant strategy, is that no transaction will take place. We do not have a good reason to trust each other but (strictly within rational choice theory) there is a very good reason to think the other will take the opportunity and ran away with the goody.

There are several theories concerning viable solutions to PD-type problems. The most common game theoretical solution is iteration: if the game goes on for an indefinite period of time, and players are allowed to learn about outcomes and adjust their behaviour, sooner or later they will learn that mutual cooperation is the best solution. Simulations for n-person PD games (or simply cooperation-games) show that a simple tit-for-tat strategy (or retaliaton for defection and cooperation for cooperation) will teach even artificial agents to (mostly) cooperate.

Another version of this game is the "lemon-market". When you buy a used car from a used-car

vendor, the risks are high: you can end up with a "lemon" (the type of car that the seller can trick into moving but as soon as you are out of the door, it will fall into pieces). Of course, if you tell your neighbours who are about the buy a second-hand car, that they should not go to this particular shop, and they pass on this information to others, and the others to yet more others, the shop owner will go bankrupt (provided the community is small enough that word can get around).

In both cases, cooperation is rewarded in the long term, *if* there is a significant chance that noncooperative behaviour causes more harm than good to the individual. This is why it is profitable to grant warranties or payback, and, in general, provide good services. And this is why hack doctors and scam artists have to move around constantly – they have to avoid repeated games, so they have to avoid people who might know people they already had some dealings with. There are some complications with the lemon market-type game that I do not tackle here as they will not come up in specifically internet settings. The point is that as long as there are repeated interactions that have a visible or recognizable *trail*, cooperation pays off, even among completely detached actors.

This type of scenario is what Russel Hardin calls trust-as-encapsulated-self-interest. A person is deemed trustworthy because we know he/she has all the good reasons to be reliable.

What made eBay a wonder in the early days of the internet was the fact that rational choice theory predicted mutual defection – meaning, basically, that transactions would not happen, or, to put it in another way, that eBay would not happen. Fraudulent trade was indeed the most often reported transgression on the internet, and, in cases of anonymous buyers and sellers, or scam-companies that asked for advances, there was not much legal help and no informal norm-enforcement whatsoever.

But if it was impossible, in theory, for eBay to exist and thrive, it did just that. As Peter Kollock, an early pioneer researcher for internet based communities and risk management in online trading, summed up in an article in 1999, "Two years into its history (summer 1997), eBay released a report stating that of the 2 million auctions that occurred from May through August 1997, only 27 were considered to involve possible criminal fraud (these cases were referred to the US Postal Authority for prosecution as mail fraud)" (Kollock 1999).

Ebay was not the first trading site or online place where, among other things, trading was also a common practice. The largest community in the early days of the internet, Usenet forums, also

contained threads or topics where registered users traded. Usenet can be called a community in the sense that it grew slowly over time, connecting people who were interested in particular topics – anything from computers and movies to parenting or unconventional sex practices – and who exchanged messages online in a forum-type threaded conversation. I will have to say more about forum-based interaction later, here I only note that Usenet members knew each other, in a way, although they remained anonymous and might have never met, they often acted as a community.

For instance, they created a detailed guide (in FAQ form; FAQ stands for Frequently Asked Questions) where regular contributors and traders listed the most common problems or questions and answers. It means that individual transactions were activities within a community that pre-existed its trading channels so members already had some kind of reputation, i.e. qualities attributed to them by other members who interacted with her/him, and that, at least for members who knew about such reputations, provided some information concerning future behaviour.

Usenet had a loose negative reputation system (dissatisfied users left comments on their partners) and after a while they even instituted a blacklist of users who had many negative feedback comments. However, the easy registration process allowed individuals to change their online identity so blacklisted members just disappeared and came back under another alias.

Ebay was not a community – it was an auction site from the very start. If Usenet members could gossip and pass on information in an online version of the word-of-mouth process, eBay started with a pre-installed reputation system. It was simple: both buyers and sellers could leave feedback on the partner in a transaction. Positive feedback raised the reputation score by one, negative feedback decreased it, neutral feedback left it where it stood. Aggregate reputation scores appeared by the screen name of registered users. Peter Kollock referred to this reputation system as "insitutionalized gossip". It is a catching phrase, yet it is more appropriate in the case of Usenet than in the case of Ebay. Usenet's threaded forums – as forums in general – had a far lower turnover rate and far less peers. Word of mouth or gossip is a viable means to create reputations in relatively small settings but it becomes unmanageable in a service with exponential growth rates and millions of users.

Ebay reputation mechanisms relied on encapsulated self-interest, as described by Russell Hardin. Encapsulated self-interest is a strategic game where cooperation is favored over defection because of the nature of iterated games. This is certainly not gossip or word-of-

mouth where the person whose reputation is being created or destroyed has few options and his/her reputation can be quite independent of actions in strategic games.

Ebay initially provided no guarantees or warranties beyond the reputation scores: all risks were born by the parties involved in the transaction, and the only mechanism in place to avoid risks was the reputation mechanism. Trading on eBay could be (and was) analysed as the purest form of strategic interaction in an iterated n-person PD game.

The only non-PD problem was the reputation system itself: how to provide incentives for users to actually post truthful and informative feedback. This is a common problem in all ranking or rating systems: users usually do not bother with leaving comments or feedback as they do not benefit from them. This form of game-theoretical problem is described as the problem of the production of public goods. Ebay took care of this by providing incentives to individuals to rate: as both sellers and buyers could rate each other, and sellers and buyers were all judged by their reputation score, it was wise to leave feedback in order to receive feedback. This, of course, led to strategic rating and the preponderance of positive feedback. If positive feedback was reciprocated, both parties benefited; if negative feedback was reciprocated ("retaliation"), both parties suffered.

Users were thus afraid to leave negative comments but this did not prevent eBay from performing surprisingly well. In 2007, some new features were added to the old reputation scores, making it possible for users to leave anonymous comments on sellers (but only on sellers), and give detailed feedback on a number of issues (such as quality of good, exactness of description, speed of delivery) by using a five-star rating system. This system could not be hacked or used opportunistically by mutual threats of reciprocated ratings. Despite this a more recent study, comparing ratings before and after the introduction of the new system found that ratings were still mostly positive but negative ratings did appear more frequently and "5 star" ratings were rare. They also note that strangely, for some months before the new system went live, users started to give more negative feedback – even though they still had reason to fear retaliation.

(Tobias J. Klein- Christian Lambertz – Giancarlo Spagnolo – Konrad O. Stahl: "The actual structure of eBay's feedback mechanism and early evidence on the effects of recent changes", manuscript available at

http://www.gianca.org/PapersHomepage/Klein%20et%20al.-%20Actual%20structure%20of%20ebay.pdf)

The authors present their paper as a detailed description of the reputation system of eBay, and in their concluding remarks, they make suggestions for further improvements that might help the efficacy of reputation systems in general. However, there is another way to look at this. As Ebay evolved, more and more professional traders appeared who, instead of trading occasionally, made their living running their Ebay shop. Third party services also joined Ebay. In this sense, sellers and buyers were not peers any more – eBay, while keeping its original services running, also became the world largest online warehouse. The balance of power in this setting favours big sellers who do not have much to lose with one negative comment (as opposed to the buyer). In fact, a third party company offered businesses on Ebay a service to automatically reciprocate negative comments before the (fictional) deadline on feedback expires. Ebay Inc. offered this service only for *positive* feedback. This is clearly a very different eBay from the one Omidyar had established more than ten years before the new rating system was introduced: anonymous comments would have been lethal to peer-to-peer trading, also, there would not have been much incentive to leave feedback at all. For eBay as it works now, anonymous comments are needed to protect individuals from the new imbalance of power between sellers and buyers. The same evolutionary logic applies to some other innovations – the escrow service, PayPal and buyer or seller insurance. Ebay not only grew exponentially but turned into something else.

As I stated above, eBay's reputation system is a perfect match for the encapsulated interest theory of trust. No one needs to be trusting by nature – the right incentives are there, and an effective tit-for-tat system, adjusted to reflect agent power, does the rest. However, this is not how its creator would describe it.

Ebay founder Pierre Omidyar is a French-born Iranian computer scientist who created the trading site on his own personal website, partly inspired by his wife's collection habits (she collected PEZ dispensers). The service was free, and, reputedly, the first trader bought a broken laser pointer for almost 20 USD. Omidyar was – so the story goes – so surprised that he actually called the buyer and asked him if he knew the laser pointer was broken. Whereupon the buyer said he did know – he collected broken laser pointers.

While economists were fascinated by the market aspects and auction mathematics of eBay, Omidyar says it is a community and was meant to be a community. His belief in online peer communities is demonstrated by his most recent venture, a peer journalism site for Hawai, peers being equal members (individual citizens) of a community that in this case is Honolulu and other localities in Hawai.

What is more, even though eBay Inc. enjoyed an uninterrupted growth in the last fifteen years, turning Omidyar into the richest Iranian in the world, and adding completely new types of services that have much less to do with individuals bidding or trading, their mission page has not changed – the "Code of Business Conduct and Ethics" page of eBay Inc. contains the following:

We do business according to the highest ethical and legal standards. This Code of Business Conduct highlights some of the laws and policies you need to know in order to meet that test.

Ever since Pierre Omidyar founded eBay, we've stayed true to some core values:

We believe people are basically good

We recognize and respect everyone as a unique individual

We believe everyone has something to contribute

We encourage people to treat others the way they want to be treated themselves

We believe that an honest, open environment can bring out the best in people

These principles support our basic purpose: ***We are pioneering new communities around the world built on commerce, sustained by trust, and inspired by opportunity.*** *These values and this purpose help make eBay a special company. And the Code you're reading now helps us put them into practice. It's not just a set of rules, but an intentionally broad statement of principles. We've written it in a way that's meant to be easy to read. So please read it now, ask questions if you have them, and read it again and ask more questions down the line. Of course, no code of conduct can cover every situation. All of us need to observe not just the letter, but also the spirit of this Code in all our dealings on behalf of the company. We are an evolving company, and by our actions we continually shape our corporate culture. We want that culture to promote the reputation and reality of professional and ethical conduct. Please do everything you can to help us reach that goal."*

This clearly indicates what Omidyar thought (and continues to think) to be the secret of his auction site: a community, that is governed by norms (of course, many legal rules also apply but pride of place goes to community as defined by peers that follow norms).

If encapsulated self-interest is a solution to agent-principal (and in general transactional trust) relationships, so are norms that are internalized and/or enforced by members of the same community. In fact, one important criterium for describing a group of individuals as a community is shared norms. Norm enforcement is a powerful tool both to maintain community boundaries and to enhance feelings of membership and belonging as Kai Erikson demonstrated in a 1966 book (Wayward Puritans; Wiley, New York), early Puritan communities defined

themselves by identifying and expelling heretics and witches. Religious communities are far from being unique in this respect. School classmates usually share the norm of not telling on another classmate – defection may result in serious harassment. Subcultural groups are also characterized by drawing their boundaries by community-enforced norms; although in this case norms might require certain ways of behaving and dressing rather than holding "right" beliefs and following "right" practices (more about this in the chapter on internet tribes).

In the original PD setting community is not presupposed. But even without community norm enforcement, internalized norms or other shared forms of rules guiding behavior may solve PD problems according to some game theorists. Douglas Hofstadter argued in *Metamagical Themas* (Hofstadter, Douglas R. (1985). *Metamagical Themas: questing for the essence of mind and pattern*. Bantam Dell Pub Group. ISBN 0-465-04566-9. - see Ch.29 *The Prisoner's Dilemma Computer Tournaments and the Evolution of Cooperation*) that "superrational" beings will look for mutually beneficial options in a PD situation as they know (or if they know) that the other party is also "superrational". This of course leads to cooperation. Although Hofstadter's idea is criticized as completely utopian in requiring complete rationality *and* a common knowledge of this complete rationality, it shows that PD is a cooperation problem without common knowledge. Where common knowledge is present (which, in this case, is superrationality), PD games change their structure.

A common translation of superrationality is internalized norms concerning duty – some social scientists argued that Kant's categorical imperative is a solution to PD.

In fact, "superrationality" and the categorical imperative do not differ in content (you make your decision following a rule that you think should form the basis of all decisions by all people in the given situation), they differ in the incentives they offer. With Hofstadter, you know all people (or the people you are dealing with) are superrational, therefore there is no risk involved in cooperation. With Kant, you can only wish people made their decisions as you did, just as you might hope but never know if there is any reward in this world or beyond, for your dutiful conduct. Yet you do your duty (follow your maxim based on the categorical imperative) even if you are not optimistic about people (Kant certainly wasn't) and sceptical about rewards hereafter.

The above solutions all work in various internet settings. Expulsion (or in internet lingo: banning or blocking) from a community is one of the most common sanctions on the internet and will be explored later in more detail when I examine risk, trust and reputation within internet communities (Tribes, enemies, commuters and friends). Hofstadter's paradigm also

has interesting implications for internet-based communities that I will explore the closing chapter dealing with the role of mutual, common or higher-order knowledge and privacy.

Returning to the eBay Inc. “Code of Conduct” page, the rules reflect the community or norm-based solution rather than the encapsulated self-interest theory. Indeed, they go one step further than either Hofstadter or Kant: the stated principles make no reference to rationality but express basic beliefs and norms. Their appeal is emotional rather than rational.

Ebay’s mission statement therefore exhibits (and encourages) a strong belief in minimal peer membership with common knowledge features (the latter being mutual and general knowledge of the fact that reputation scores are observable for all). Repeated interaction is based on the acceptance of this minimal membership where some basic norms can be enforced by reputation scores.

Adam Smith observed that interaction between people tend to “polish” them as they learn to observe the rules that are perceived by their peers as appropriate in a given context. The impartial spectator concept is in fact a theoretical construct to describe the process whereby norms become internalized under pressure from peers. Goffmann describes this as stepping on the stage, or getting involved in a situation (situations are interactions where people are aware they interact) and adjusting our behaviour accordingly. To illuminate his theory he opposes “normal” human behaviour to “abnormal” human behaviour observed in mental institutions. People in mental institutions do not need to care about rules concerning situations that frequently occur in human interactions as they have nothing to lose in terms of a reputation of being normal. Therefore they act in a manner that seems strange or deranged to outsiders. At this point I note that Goffman's theory concerning mental in-patients is extremely useful when we try to analyse online behaviour such as cyberbullies, trolls, flaming, or in general, emotional and social transgressions on the internet (other than fraud).

To sum up: eBay has a near perfect rationality-based reputation system that corroborates the encapsulated self-interest theory of trust. It presents the purest form of an empirically observable iterated multiperson PD, and empirical analysis corroborates the results of the famous simulation contests of Robert Axelrod where in most iterated multiperson PD setting a Tit-for-tat type algorithm wins after several hundred iterations. (Tit-for-tat was originally submitted by Anatol Rapaport in 1960 for the contest, and re-submitted each time a new contest was organized. Although the creators of competing algorithms knew by then the advantages of Tit-for-tat, this simple algorithm still won in most tournaments.) Ebay is everything a game theorist dreams about when it comes to empirical testing.

Yet eBay, as Omidyar saw it, is not *producing* trust by iterated interactions – it is *based* on general trust (in the strict sense of the term). This view of eBay of course might be a simple whim of a philanthropist or an optimistic entrepreneur. This also could be a simple deception or something to mask the raw realities of strategic games. I will argue that even if the first principles do mask to some extent the fact that eBay is for traders who trade for (subjective) gain, there is a good reason to it. I will even argue that without the community and norm-based argument (and the online services, such as forums, that support community features), eBay could not exist – just as rational choice theory predicted.

My argument has broader consequences for the meaning and place of trust on the internet. As I noted in the previous chapters, there are several instances of transactional risk problems on the internet, and many solutions – some are PD-related, some are not. It is important to see that there is a common element in different solutions – such as eBay reputation, the Zagat restaurant guide, Amazon.com reviews and referrals within communities where some trading is also going on.

The most salient common feature is that these solutions tend to build positive, rather than negative reputation, even if their design could allow a more symmetrical outcome. Negative comments seem less relevant in peer-based trust solutions where feedback is given by peers (that is, people we perceive as similar to us in some important aspects). I already explained the introduction of anonymous commenting to facilitate negative feedback on sellers as a response to the fact that new types of actors appeared on eBay that do not fit into a peer-to-peer model. The new actors on eBay can more easily avoid negative consequences of negative comments, at least as long as they trade in a far greater volume and with many more users than the user who leaves a negative comment. Two complaints against a company – however justified – will not destroy its reputation (on eBay or anywhere else), two complaints against an individual who walks in a store to buy or asks credit from a bank are more than enough reason for big corporations to refuse any transaction.

"Peerness", therefore, means having equal leverage in an information economy. When I consider buying something (or going to a restaurant) my peer is a source of information who faces similar advantages or disadvantages when providing information as I would in his or her place. Advantage and disadvantage here can mean gaining reputation (as a reviewer), getting retaliatory negative feedback and suffering from it, taking the time to write a review (and facing opportunity costs), taking risks and gaining enough experience (by buying and reading a book or by completing a transaction) to get and provide relevant information, etc.

If we define peers based on their place in the information economy, it becomes clear that even if the traders or the parties to a transaction are not peers, information providers can still be peers. Reputation systems, and other solutions to risk in transactions online, are not about the actual transaction; they are about the feedbacks, or the information provided that might help a peer decide. Peers are not the parties to a trade; the parties become peers in the whole of Ebay when they provide feedback.

This implies that although the early eBay system with its reciprocated ratings might have offered a distorted view of actual user experience, because of strategic rating, it was still relevant, still good enough for eBay to grow and help millions of transactions to be completed. As Paul Resnick observed in a seminal paper on eBay the difference on eBay is between having a reputation and not having one.

(Eric Friedman and Paul Resnick. "The Social Cost of Cheap Pseudonyms." 2000. http://www.si.umich.edu/~presnick/papers/identifiers/index.html.),

Buyers are not interested in "bad" sellers – they look for "good" sellers, just as people look for good restaurants, good movies and good repairmen. For relevant referrals, they look to peers (who face equal costs in getting the experience that allows them to leave feedback). The structural similarity of peers regarding information resources and risks of course often implies that they have other similarities as well but this is not necessarily the case. A peer can refine the relevance of his/her information resource by only taking into consideration the feedback of peers who have similar tastes or whom he/she trusts more than other peers. However, in all such peer information economies, there is no way avoiding an initial trusting disposition. If you don't trust the feedback of your peers then reputation systems will not help you much. This initial step, however, implies that there is some (not necessarily conscious) recognition of some kind of community where you *do* have peers. Peer is a relational concept: you cannot be a peer unless there are other peers who are your peers and who (at least potentially) regard you as a peer.

If we take this train of thought one step further, the same structure of peer reputation appears in many other internet settings. A toplist, for instance, can be regarded as the outcome of a peer reputation system (although without any feedback tools: the simple download or view-count is enough). Such toplists are staples of major internet genres and popular sites, from download counts on Download.com or Mozilla.org, to view counts on Youtube and "most commented" or "most emailed" lists on blogs or internet news sites. We usually would not regard these services as posing risks, especially transactional risks – the only risk for a Youtube user who

avoids toplists is wasting time or not knowing what "the world is watching". But all such sites provide peer information on something a user may want – and most such sites, even peer-to-peer downloading services, call themselves communities and offer all the paraphernalia of a community – registered names (that is, recognized membership), communication tools, a common knowledge description or mission statements, or other announcements, that are meant to foster community feelings and an informal language (a feature that we tend to take for granted by now, even though it has enormous cultural significance).

One important example shows how important this community-feeling can be for internet services. Youtube, the video-sharing service, was founded in 2005 and from the very start it emphasized community features. Youtube has barely began growing when Google – by then the first and most important gatekeeper on the web – launched its own video sharing site that actually offered better service in terms of the length and quality of video that a user could upload; without any social features though and without emphasizing community. Youtube proved invincible – its community features made it much more appealing than Google Video. So Google finally bought Youtube for a considerable price (1.6 billion USD) – and kept all community features in place.

I return now to the question of why eBay is a community when it could do without community features or the language that emphasizes community (at least according to mainstream economics).

While respect for norms and benevolent predispositions might be presupposed, even for as large a community as the human kind, it is rather risky to take them for granted. Founders of eBay may stick to their moral philosophy, and take whatever risk is involved. But users might not share its optimistic outlook or may not share the norms implied at all. It is managing *this risk* that eBay created its reputation system for. The reputation system on eBay was not created to tackle the rational choice dilemma of PD, it was created to generate common (or mutual) knowledge that inspires trust in users that the *whole system* does work and by-and-large protects *them* from their individual risks in individual transactions. Let me illustrate the difference between the two kinds of risks by some examples, returning to the original PD metaphor.

Amy is a passionate collector of beanie babies. (This is not a rare addiction; many people, and even people above 40, collect beanie babies). In scenario one, Amy simply searches for beanie babies on the internet and finds a listing on eBay. This is the early days, there aren't many sellers and buyers and there are only two that offers beanies. One of them has a beanie for sale

that Amy desperately wants. Amy sees the seller's score – it stands at 9. The other seller stands at 25. If she goes deeper and explores the transaction history, she sees that her chosen seller sold 11 beanie babies to other users. What will Amy do? These scores are not high enough to feel completely assured. The reputation of the other seller might be a bit higher but he does not have the right beanie. Amy at this point discovers that there are forums for Ebay users. She goes there and asks questions. Amy now discovers some other beanie collectors on the forums – they discuss their collections, how eBay worked for them, and may also have something to say about this particular seller. Amy feels she entered a community where she gets good advice from peers. This encourages her to bid and buy. Without the community support, Amy might as well go elsewhere or return to her offline sources.

Scenario two. Amy heard about eBay as the best source to bid for rare beanie babies. This is 2011, eBay is a well established auction place with millions of transactions. She searches for "beanie baby" on Ebay or picks the relevant category from the category tree of listings. Actually, she does not even need to enter eBay – there are specific eBay search bars, integrated with browsers, that even give you the details of the bidding process. There are 60148 hits for "beanie baby" (the actual number is from September 3rd, 2010; I searched for our hypothetical Amy). She scrolls and picks beanies that would make a cherished part of her collection. Then she looks at the sellers. Let's say she decides on "**JEANETTE ~ Chipmunk Chipette Ty Movie Beanie Baby NEW".** She checks the score of the seller: "mlutsky" has a shooting star badge and a 30893 score, with 100% positive reviews. She also sees that mlutsky has five star ratings on all four aspects of trading, and is a member since 1999. Amy does not need to ask community members – mlutsky has all the right credentials, so Amy starts bidding.

What I described in the first scenario is a "cold start" problem. Before reaching a critical mass, internet services that rely on customer feedback to encourage trust between traders have a problem: there simply isn't enough information for a reputation system to work. Although eBay cleverly gave a very good incentive for users to rate (because being rated is important in establishing your own credentials), with only a few users rating this is still not enough to firmly establish trust.

The role of communities

In a cold start scenario there is a typical s-curve described by Everett Rogers in his *Diffusion of Innovations* (the first edition was published in 1963, well before internet-age). Early adopters (who are willing to take risks) are few in number, however, they have connections with other

people in their environment. At a crucial point a multiplicator person takes on the innovation. Multiplicator persons can be people who have some standing in a community and have many acquaintances. In a small town a multiplicator might be a local physician or popular shopkeeper, or someone who is very active in the community. In internet settings a multiplicator is a node in the web of internet that draws a lot of traffic and/or ranks high (e.g. in Google's page ranking system). When a multiplicator endorses an innovation, many more people will adopt it – the highly conservative members or people who are on the margins of a community (multiplicators only exist in and for a community, however loosely defined) will be the last to adopt, and, of course, there will be some people who resist anyway.

To solve a cold-start problem, you need a community. No wonder that many – probably most – of the successful internet services are founded by small communities (such as male Harvard college students who wanted to rate female college students), and often they are meant to solve the problems of a close-knit group (or a single individual) where membership was defined as having the same problems to be solved. ARPANET solved problems of communication between scholars, Usenet solved communication between people with similar interest, MUD-s (Multi User Dungeons; role-playing games that thrived in local offline groups before they made their way to the internet) solved the problem of geographical distance between gamers, IRC channels (Internet Relay Chat – real time communication channels, usually organized around themes) solved the problem of real time communication, ICQ (the father of all instant messaging services) solved a problem of real time communication between people who used Windows rather than Unix. Most of these services were completely free at first, but as they grew they needed venture capital (to buy servers and hire personnel) and were finally bought by big corporations.

A Hungarian example of this typical history is iwiw (first called wiw) that was finally acquired by Hungarian Telekom. Another example in Hungary is Index forums that started as a private forum with about 50 members back in the late eighties – well before the world wide web --, then was acquired by a medium size company and finally ended up as part of one of the largest media empires in Hungary. What is important is that no features were changed, or only those features were added that community members approved of, and self-governance was maintained throughout changes of ownership. No big corporation could have created such services. They did not have the right user base – a user base with a sense of community because of shared problems and dedication to this community after they started personal interaction with peers within the community of shared problems (or interests). When corporations bought

these services, they also bought the community that made them successful (often leading to protests by community members).

Geo-cities: community and the exit option

GeoCities was conceived as a community-building service, using a mock geography of the Pacific coastline first, then adding "Tokyo" and further sites, until the previous geographical connection was completely given up. GeoCities adressed its users as "Homesteaders", reflecting John Perry Barlow's lockian notion of the cyberspace (see below). In 1997 – the peak of internet enthusiasm – it reached the million user mark, went public and was finally bought by Yahoo. "Homesteading" as a metaphor for early internet users also appears in Howard Rheingold's influential book (or rather, cyber-autobiography) *Virtual Communities: Homesteading on the Electronic Frontiers*.

„Homesteaders" however, did not like the fact that they were „sold". Users began to leave because of the new terms of service. The terms stated that the company owned all rights and content, including media such as pictures.

Yahoo was forced to retract this provision. It proceeded to add new types of urls – names where individual pages could be reached – using usernames instead of addresses. However, members who signed up prior to the abandonment of neighborhoods retained their old address in addition to the new username-based one. Soon after the change to a username-based system, a lawsuit was filed against Yahoo! by its volunteer group of community managers, GeoCities' volunteer program (Community Leaders). The demise of GeoCities was also caused in part by an email-chain in 2007 that claimed GeoCities is about to be closed. Even though these news were refuted on the New York Times frontpage, users kept leaving: from the estimated 177 million users annually, user base declined rapidly until 2009 when Yahoo closed the site. Users were also angered by the fact that registration information (containing personal information) was sold by Yahoo to third parties, for targeted advertisement, although user were not asked for their explicit permission for this.

A community grievance and a rumour can be as effective as a verified statement in inducing a process of transformation *if* the content of this rumour is believed to be common knowledge. If many people think that many other people think (etc) that "we are sold" or that "this survice is about to be closed down" they expect others to leave, therefore they start leaving themselves.

World-of-mouth reputations

But it is not only big corporations that fail in creating viable communities (and viable reputation systems). I conducted an experimental search and looked for small commercial websites that rated shops or other services. Typically, these services do not have a community behind them – no wonder there are very few ratings (often only one rating for a service that – without a user community to ask – looks suspiciously self-serving). Offering price comparisons is a useful feature, at least for novice users without access to a relevant peer information community. A relevant peer information community would know and tell that the cheapest services don't list themselves (for a fee) because word-of-mouth recommendation is enough advertisement for them.

When people look for good repairmen, they do so in local forums or among acquaintances in social networks (or – as we always did before internet-time – by asking friends) and ask for recommendations, based on the personal experiences of people they trust. *Trust* is a key word here: before we trust a repairmen, we have to trust the person who recommends the repairman.

This trust is not necessarily general interpersonal trust. I may trust a recommendation coming from a friend of a friend on Facebook whom I may not know at all. What I trust is "peerness" in the sense I described above: the structural symmetry in the costs of gaining information, that is, learning by the hard way who can be trusted as a repairmen. Structural peerness does not presuppose acquaintanceship or friendship. It is a precondition that is transformed by communication channels into actual interactions and important weak ties and not infrequently into strong ties in the long run.

Reputation systems without a peer community do not work and never will. This is why it is somewhat strange to find technical books published by renowned publishers that claim to teach you how to create a perfect reputation system. In 2010 O'Reilly (the most important publisher for popular computer science books) published *Building Web Reputation Systems* by Randy Farmer and Bryce Glass. Amazon cleverly suggests to buy this book together with *Building Social Web Applications: Establishing Community at the Heart of Your Site* by Gavin Bell. These books can be useful, no doubt, but there is no guide for creating a community-base that is right there when and where your service starts operating. Cold-start kills many services before the founders blink twice. Communities (even in the very weak sense of structural peerness) come first and features that further encourage community interactions are custom-made (and constantly remade) to reflect the changing needs of the underlying community.

On a more theoretical level, peer-to-peer trust necessarily precedes trust in a reputation system. The risk that eBay faced was not protecting traders – the risk for eBay was not starting off at all. They had a potential peer community – collectors – but they had to turn potentiality into actuality. And they did.

A reputation economy?

> "I'd been in poor repute before, not so long ago. The first time Dan and I had palled around, back at the U of T, I'd been the center of a lot of pretty ambivalent sentiment, and Whuffie-poor as a man can be. I slept in a little coffin on-campus, perfectly climate-controlled. It was cramped and dull, but my access to the network was free and I had plenty of material to entertain myself. While I couldn't get a table in a restaurant, I was free to queue up at any of the makers around town and get myself whatever I wanted to eat and drink, whenever I wanted it. Compared to 99,9999999 percent of all the people who'd ever lived, I had a life of unparalleled luxury. (…) Even by the standards of the Bitchun Society, I was hardly a rarity. The number of low-esteem individuals at large was significant, and they got along just fine, hanging out in parks, arguing, reading, staging plays, playsing music. Of course, that wasn't the life for me. I had Dan to pal around with, a rare high-net-Whuffie individual who was willing to fraternize with a schmuck like me".

If you read the above passage from Down and Out in the Magic Kingdom, Cory Doctorow's first novel (2004), you are likely to stand dumbfounded. The key references are simply made-up words. However, for someone who is steeped in internet culture, and knows the debates about reputation economy, the above passage makes perfect good sense. Change "Whuffie" to reputation and "the Bitchun society" for any internet community (a Multi User Dungeon, a MMORPG or a blog) and it is clear that our hero has become what a pariah is or can be on the internet: perfectly healty and kicking, without any respect, reputation or even communication from others.

Doctorow's hero lives in a world where most people have become digitalized. They "back up" and than retrieve themselves (memory, identity) if their body happens to go the way of all flesh. Therefore, they cannot die. If they are very bored with living forever, they freeze themselves for a few hundred or thousand years and wait to see what happens when they wake up. Our protagonist is no exception, until a chain of events unfolds (which do not concern us here). By losing out in a game against another group (they compete in beautifying Disneyworld), he loses his whuffie and denies to be "fixed" or "restored" from a previous backup, fearing that he loses the memories that he acquired since his last "backup". Of course, the more he delays his resurrection, the more he is about to lose – so the novel pretends to be the notes he writes for himself to reconstruct the events that occurred in the gap between his two selves.

The Bitchun society basically follows the rules of nature – for beings who cannot die, but *can* lose their reputations which is more important than life.

"Bitchun wars are rare. Long before anyone tries a takeover of anything, they've done the arithmetic and ensured themselves thet the ad-hoc they're displacing doesn't have a hope of fighting back. For the defenders, it's a simple decision: step down gracefully and salvage some reputation out of the thing – fighting back will surely burn away even that meager reward. No one benefits from fighting back – least of all the things everyone's fighting over. For example: It was the second year of my undergrad, taking a double major in not making trouble for my profs and keeping my mouth shut, It was the early days of Bitchun, and most of us were still a little unclear on the concept. (…) I saw it happen (…) The prof was down there on the stage, a speck with a tie-mic, droning over his slides, and then there was a blur as half a dozen grad students rushed the stage. They were dressed in University poverty-chic (…). Five of them formed a human wall in front of the prof while the sixth, the heavyset one with the dark hair and the prominent mole on her cheek, unclipped his mic and clipped it on her lapel. (…) Before I start, I have a prepared statement for you. You'll probably hear this a couple times more today, in your other classes. It's worth repeating. Here it goes:

"We reject the stodgy, tyrannical rule of the profs at this Department. We demand bully pulpits from which to preach the Bitchun gospel. Effective immediately, the University of Toronto Ad-Hoc Sociology Department is *in charge.* We promise a high-relevance curriculum with an emphasis on reputational economies, post-scarcity social dynamics and the social theory of infinite life-extension (…) [after defeat] the profs spent their course-times whoring for Whuffie, leading the seminars like encounter groups insteadof lectures. (…) At the end of the semester, everyone got a credit and the University Senate disbanded the Sociology program in favorof a distance-ed offering from Concordia in Montreal. Forty years later, the fight was settled forever. Once you took backup-and-restore, the rest of the Bitchunry just followed, a value-system settling over you. Those who didn't take backup-and-restore may have objected, but, hey, they all died."

Doctorow says about *Down and Out:* It's often very hard to measure the thing that you're hoping for. (…) with Whuffie (I imagine) a completely undescribed science fictional system that can disambiguate every object in the universe so when you look at something and have a response to it the system knows that the response is being driven by the color of the car but not by the car, or the shirt but not the person wearing it, or the person wearing it and not the shirt, and also know how you feel about it. So it can know what you're feeling and what you're feeling it about. And I don't actually think we have a computer that could that; I don't think we have Supreme Court judges or Ph.D. philosophers that can do that.

Doctorow is anything but a bitter neo-conservative critic of the internet and its communities. In fact, when co-editing Boing-Boing, he himself was king granting properties in a reputation economy: once a reference with a link appeared to someone or something on Boing-Boing, its

visitors multiplied and its reputations grew. However, just as it is easy to gain, it is also easy to lose reputation. The protagonist's whuffie in the novel rises to a new peak when his friend, Dan, before committing suicide, claims that all the wrong things done by and done to the hero were his making, in a conspiracy with the arch-foe of our protagonist. We never learn if this was actually true – the assertion itself, followed by a suicide, was enough to re-establish the reputation of the hero. The arch-foe, on the other hand, lost all hers.

Reputation building is an extremely important business in the real world (IRL), and reputation experts claim to teach companies how to polish their names. The historian James B. Twitchell went as far as calling the United States "Branded Nation" in his 2004 book of the same name (Simon and Schuster, New York). However, reputation economy on the internet is a different kind – or was, up to a point. Early internet pioneers supposed that it is reputation rather than monetary incentives that drive people to contribute content, especially when it requires much time and effort, or embodies expertise that could be monetized. Certainly, contributors to Wikipedia receive no advantage other than the acknowledgement of their peers (and even that is only possible by community members who bother to look through editing histories of articles).

The case of many multi-author or expert blogs is similar: before online advertising, bloggers blogged because they had something to say and also wanted others to hear it. Champions of free content or looser copyright regulation usually invoke this argument – bloggers blog for nothing, however, they are available to speak, for a nice price that reflects their reputation and the same goes for musicians whose music is going around in p2p-networks: what they (or their agents) lose in sales, they can recover in live appearances.

Proponents of free content usually align themselves with the new copyright system proposed by Larry Lessing, called Creative Commons. CC as it is commonly known has a more granular approach to copyright, it allows authors to specify what rights they reserve. CC includes "all rights reserved", "can be copied but now modified", "copy only including reference to author", "copy only for non commercial purposes", "free to copy and modify" and these can be combined in any way. Cory Doctorow himself is a proponent of CC and he released all his books under cc, posting them on his website in downloadable format. As he says (about a book I will discuss later):

„This is the second novel I've made available as a free download (the first, Down and Out in the Magic Kingdom, was downloaded hundreds of thousands of times and sold like hell). I'm delighted to do it a second time.

Here's the deal: I don't believe that there's any market-demand for teasers or for "Digital Rights Management" technology: none of you woke up this morning and said, "Damn, I wish there was a way I could get less of the books I enjoy and a way I could do less with them once I have them." My goal here is to figure out what people actually *want* out of electronically delivered text, and so I'm giving this novel to you in three open and flexible formats with an invitation:

Convert these files to any "e-book" or text format you want, and send them to me, along with a note telling me what reader it's intended for and I will add it to this page. The only caveats are:

1. You have to include the entire text of the novel, including (especially!) the Creative Commons license and metadata

2. If you are converting to a format that has some kind of use-restriction options (i.e., no-print, no-copy, etc), these must be switched *off*

3. You can't include the cover art. That belongs to my publisher, not me

This also shows that at some point reputation on the internet can be traded for money. Google became so big because they recognized that even small reputations can produce money if there are enough of them. Their AdSense service offers bloggers or any content provider to share advertising revenues if they are willing to place relevant ads on their website or blog (relevance here is defined by the frequency of certain keywords whereby Google can match ads with target audience). “Search-marketing” became a common form for companies, even a different marketing expertise niche, because of Google rank algorithms and Google AdSense which lead to high reputation websites gathering more traffic. Google rank algorithm is itself a reputation measure, although it belongs not to individuals (or online identities) but to nodes in the web of internet. It is a recursive algorithm where nodes that have incoming links from highly ranked nodes raise in ranks, and so on, until a ranking value is calculated for all nodes in the network.

Although reputation usually stands for *good* reputation, it can be any reputation. Some authors, especially in the early days, therefore called the internet economy attention-economy rather than reputation economy.

The first person to propose “attention economy” was Michael Goldhaber, with a background in theoretical particle physics and himself one of the early pioneers, a member of The Well, the first really tribal formation on the internet. He claims he started working on the concept as early as 1985. In 2006 he gave an interview to P2Pfoundation.net where he clarifies his point:

„In the attention economy the major kind of transaction is the passing of attention from one person to another. Because attention is intrinsically scarce, and also highly desirable, the competition for attention tends to create a spiral of ever greater strength, that is more and more intense competition, in as many different forms as anyone can dream up. Whereas the industrial system is predicated on standardized, uniform goods — including standardized, uniform money —as well as repetitive and uniform industrial work — where someone can keep doing exactly the same tasks over and over day after day, year after year, for an entire working life — in the attention economy, what counts is difference, relative uniqueness, originality, self-expression, personality, etc.

There are basically two classes: those who receive considerably more attention than they give —or stars, in a very generalized sense; and those who pay out more attention than they get — or fans. Attention is remembered, so the new kind of wealth is not to be found in banks or material goods or stock ownership, but rather in the minds of one's fans. And so on.

As far as I am aware, this idea of an entirely new sort of economy remains solely my contribution —others who may use similar language mean only that corralling attention is a way to make money, which is very far from my basic point. If the attention economy in my sense comes to dominance, eventually money will have no meaning. One way to think about this: monetary wealth, — in essence a single number — is extremely narrow-band; attention as wealth — dependent on many aspects of person's characteristics and expressions — is extremely wideband; in a wideband world, the narrow band money is a tiny, irrelevant detail.

In principle, I am very much for human equality and valuing every person equally. That's why in principle I favor some kind of socialism, which entails an equal division of important kinds of wealth, very much including attention. But, like everyone else I know, I find it hard in practice to pay equal attention to everyone, for the reasons just stated. It takes an incredible degree of self-discipline. If we could devise means for each person to express themselves in ways equally interesting to all others, then we might have what might be called "attention socialism." I encourage everyone to work towards that ideal. In all probability, the efforts will be imperfect, but they might well help flatten the differences between stars and fans, or, in other words, they might eliminate some of the inequalities inherent in the attention economy." (http://p2pfoundation.net/Michael_Goldhaber_on_the_Attention_Economy)

Another early proponent of the reputation economy was Howard Rheingold who in his book, *The Virtual Community (1993)* described reputation as the most important incentive behind collective action on the internet.

What empirical evidence we have about attention economy, tends to both confirm and contradict Goldhaber's utopia. Stars are not replaced by individuals with equal access to attention but stars are created on the internet by the sheer number of (peer equivalent) users who pay attention to them. It is true that especially in purpose or project-oriented groups and especially in groups of the technically savvy reputation is a driving force. A study (Stewart 2005) describes in detail the system of Avogato that includes a sophisticated system to make

visible (to all) the reputation of all members of this particular open source development community. However, we must note that less than half of those participating have a reputation – and the most salient persons in the community tend to amass more reputational feedback (an interesting case of the Matthew-effect, as described by Robert Merton).

However, attention often goes to content, not person. Some extremely popular websites are well known not because of the popularity, the high expertise, the authenticity, the good taste or the high reputation of its editors. They become star content containers because the contant they produce is outrageous or in some other way off-off compared to mainstream media, and this content often does not have authors at all.

Digg.com (that Doctorow refers to and compares to Facebook) is an online service where anyone who registered with Digg can submit favourite stories by "digging" them. Top digged articles then appear on the website of Digg. Digg after a while – growing big and "respectable" – was forced to introduce "topics". Topics serve to differentiate the types of articles digged most from articles that are attention-worthy according to mainstream media.

Compare the two columns. On the left, mainstream news articles that receive diggs in the dozens at most. On the right, articles with bizarre, personal or funny content receive diggs in the hundreds. Although one can argue that this is simply what is out there – thereby agreeing with intellectual critics of the internet --, these news are not exactly what we call tabloid news (although tabloid type news also receive a lot of attention on the internet). These are news to be shared – because the "digger" finds them entertaining and whishes to entertain others as well, and because these news items will rarely make it to the front page of a tabloid, not to mention a serious paper.

This is internet communication where a sense of community is created by telling (sharing) jokes – we do know that jokes can work as shibboleths in, or rather between, cultures and subcultures, thereby defining their boundaries. If diggs confer reputation and draw attention, it is the kind of attention that characterizes the non-informative "phatic"layer of interpersonal communication. Information (or, IRL, gestures and mimic) is shared simply to assure the sense of being there for the other, being in the same situation with him/her, listening and being involved.

Doctorow claims he writes about a system where people can "digg themselves up" in a community. Now Digg is hardly a community in any traditional interpretation of this concept. Digg is a community only if we look at it as a place where structurally equivalent peers who do

not know each other and may not wish to, communicate through “digging up” content. If your content is digged by many others (although diggs can come from any place where the digg button is present, readers of digg can re-digg any content on Digg.com), you feel you made an important contribution to this minimal community of structurally equivalent peers – you gain attention and establish a form of reputation.

In some cases, the “whuffie” described by Doctorow can enter the market directly. In an interesting book !!!!!! studied the economics of online gaming and discovered that many MMORP games, as well as some online worlds like SecondLife creates a market for scarce goods. A character within an MMORPG who has high rank or whatever scores the game uses can be sold on Ebay (the sellers transfers the account with the character to the buyer). Some other items, valuable and hard to get in these worlds, are also on the market. SecondLife is the main source of income for dozens of people who are apt at creating sought-after objects (such as unique faces, clothing, buildings or just about anything that you can possess in SecondLife).

Yet, reputation economy is not a business model in itself. Doctorow places us in a post-scarcity world. It is much like early MUD-s where a user or a wizard could create anything from words and through typing in words – which is very much like post-scarcity, except for the time it takes. Doctorow eliminates the time factor by making his characters immortal. However, there is a serious trade-off between reputation and time on the internet, as rising internet addiction and game addiction shows. Doctorow’s tongue-in-cheek comment on gamers reflects the consciousness or the ethos of someone who is not *in* the game created by someone else but who himself creates the game – the world on the internet. It is a not-so-mild criticism of the internet generation (born around 1990), the plain consumers, from the perspective of an oldie who shares the values of the pioneers, their dedication and hard work in breaking new ground.

V. Online tribes: the relevance of rich membership in creating trust

In 1996 “tribes” came into fashion, following the successful (though much criticized) book of Michel Maffesoli (*The Time of the Tribes: The Decline of Individualism in Mass Society*, Sage: London, 1996). Maffesoli theorized that in Western societies bourgeois individualism is being replaced by neotribalism, where loosely affiliated people, mostly organized on a local basis – an example could be inner-city gangs – have some sense of community by sharing subcultural norms and having regular interaction among themselves. Maffesoli's theory draws on Durkheim's theory of social coherence formed by religion and the “effervescence” of social ritual. Jeffrey Alexander, the British sociologist also re-discovered Durkheim in the eighties and developed a theory of cultural and ritual interaction-based community.

As Maffesoli's writing is rather opaque, neo-tribes or simply tribes could become a fashionable word without a fixed content: people embraced the concept and interpreted it according to their own purposes or tastes. Talk about “internet tribes” became so commonplace that I found an analysis by Pew Internet Research where certain new target audience-groups were referred to as “the nine tribes of the internet”, even though classic survey methods can identify only structural equivalence and not actual communities, whereas “tribes” are supposed to be loose formations with some social cohesion and actual ties but no structural equivalence in membership.

Despite the fact that “tribe” is a metaphor here, I try to define neo-tribalism for our purposes – that is, to analyse a type of trust that is *not* based on structural equivalence. Neo-tribal communities consist of direct person-to-person links and create and maintain their norms in personal interactions and in informal gatherings, while defining boundaries by locality and a shared language. They are characterized by strong ties in the network theoretical sense: they are friends, co-workers, they might share living space, they move together and they provide a person-to-person support network. Joining a tribe requires recognition as a member by other members, the most important membership norm is loyalty to the group and loyalty means complete identification, excluding several co-existing loyalties in one person. Family and love relationships are tribal affiliations as much as friendships – tribe is an extended family, or a relationship network that replaces family. Tribes do not have formal leadership structures; they have charismatic leadership style (as Max Weber uses the term) and as charismatic

leadership has no institutional backing, loss in faith or stature, perceived betrayal of values or simple failures might result in the breakup of the tribe or intra-tribal wars.

Neo-tribalism is very a useful concept when we try to describe conflicts and group-formation in early, user-run asynchronous group messaging services – from Usenet groups to the Well. It shows how the transition from peer membership to rich multiple and personal ties affect communities. As we will see, trust is not necessarily enhanced by multiple or strong ties and conflict is rampant within such communities, creating serious disruptions. It is very difficult to reverse the process – creating minimal membership based communities with a central node and common knowledge – based on tribal formations. Trust in tribes is constantly threatened.

Usenet was the first threaded messaging application. The idea came from Duke University graduate students Tom Truscott and Jim Ellis conceived the idea in 1979 and Usenet was established in 1980 (on what is called "the poor man's ARPANET' – UUCP protocol). They wished to replace a local BBS-style announcement system that was made obsolete with a recent hardware upgrade. Contrary to today's forums, it was p2p based (with no central server – in the original setting of course university servers could be used to storage and retrieval of messages). However USENET grew so fast that it became chaotic and the addition of more servers and their users led to disorder and chaos. Gene Spafford organized the "Backbone Cabal" to promote coordination between Usenet hosts with regard to issues such as managing article propagation, approving new newsgroups, and similar activities.

The Backbone Cabal was largely responsible for organizing, initiating, and pushing through "The Great Renaming" in 1987, which created the top-level hierarchies currently found on Usenet. The Backbone Cabal was active in some form until 1993, when Gene Spafford ceased all Usenet management duties. (http://www.giganews.com/usenet-history/index.html)

Princeton University's "Worldnet" defines 'Cabal' as follows: "a clique (often secret) that seeks power usually through intrigue". 'Cabal' of course – as often happens in user-run internet services, or community-type internet services – is a half-mocking designation of a real group in special position (as we saw above with "gods" in internet games or the "benevolent dictatorship" of Jimbo Wales on Wikipedia). The choice of the word is revealing – secrecy and take-over of power invokes the culture of hackerdom. Robert A. Heinlein, a popular science fiction writer could have provided another inspiration for the name. In his first novel, *If This Goes On,* he depicts a world ruled by theocracy (a "Prophet"), where a few people form a "cabal" to organize secret resistance, plot take-over and save victims of the ruling elite – in the end a full-blown revolution succeds, in a bloody war, and puts an end to the old regime. *If this Goes On*

first appeared in 1940 and then was re-written and included in a 1953 collection of Heinlein – obviously, this tongue-in-cheek reference is by people who were deeply submerged in the culture of Sci-Fi.

Usenet had a very special place in internet communications from the early eighties on. It was the place where Tim Berners-Lee announced the launch of the World Wide Web, where Linus Torvalds announced the Linux project, and where Marc Andreessen announced the creation of the Mosaic browser, where Richard Stallman announced the formation of Free Software Foundation, John Barlow announced the Electronic Frontier Foundation, where Amazon.com founder Jeff Bezos started hiring and where eBay founder Pierre Omidyar advertised the new auction site. (http://www.google.com/googlegroups/archive_announce_20.html – Usenet archive messages).

It was also the place where first famous internet pranks and flame-wars started, eliciting various disciplinary attempts (some of which I described above in discussing Ebay's reputation-system). Despite its prominence, one would not expect Usenet to have cases of "betrayal" or breech of trust. It was meant as a news service, to share information on specific topics. Recent studies found that the average turnover in a Usenet forum is high: over a one month period only 28% of users stays as a "core group".

Yet there was betrayal on Usenet. As I hope to show this happens when certain Usenet channels became tribal communities, creating personal ties rather than nodes in an information economy. A notorious case was started by a user called bimmler a.k.a rabbit!bimmler (who registered as Elizabeth Bimmler, although his real name was Rob Pike – a respected member of the UNIX community).

In what is known is the first "topic destruction" (by now a category in itself in moderation manuals), s/he changed the name of the thread net.suicide to "Coup d'Etat" and claimed he took over the tread and threatened to block some users (listed by their Usenet personae) from publishing articles (posts were called articles on Usenet). The very nature of the discussion group is worthy of attention – discussing suicide, methods, people who killed themselves and fiction where suicide occurs – is not a mainstream topic, to put it mildly. But you could find even more bizarre interests on alt.sex. Both subjects continue to be exciting topics for all internet generations – in mainstream internet administrators or service providers often have a policy to ban such discussions or content.

Bimmler was a mystery to most users (even his gender was a subject of much speculation) and divided sharply some segments of the Usenet community. Bimmler's point, it seems was not that discussing suicide is a bad thing; it was that discussing suicide *instead of* committing suicide is ridiculous. This is the context of his making fun of net.suicide members in sarcastic, though very literate remarks (a use of language that also characterized early internet, despite our notion that anonymity in itself encourages rough behaviour and primitive language or insults).

1. rabbit!bimmler

1983 febr. 6, 15:34

Hírcsoportok: net.suicide

Feladó: rabbit!bimmler

Dátum: Sun Feb 6 08:34:01 1983

Helyi: 1983 febr. 6 V 08:34

Tárgy: Coup d'Etat

Továbbítás | Nyomtatás | Egyéni üzenet | Eredeti megjelenítése | Üzenet jelentése | A szerző üzeneteinek megkeresése

There has been a coup. This netnews group has been taken over.

While you slept, thousands of ruthless information soldiers assaulted the network and captured the previous, now powerless and forgotten, autocrats. I am now in power. This newsgroup is strong, for I am in control and I am strong. No more will this newsgroup be tainted by whining sops seeking a brief flicker of fame by feigning

wisdom of sacred rituals. The submitters of such subversive articles shall be dealt with justly and efficiently.

Of course, as after any takeover, there must be adjustments made.

The following puppets of the old regime are representative of those who will not be contributing to the newsgroup henceforth:

brunix!jah ittvax!neiman research!rob tekcad!shauns

brunix!rb iwsl2!jgpo sdccsu3!iz328 tekid!kevenb

brunix!thf ixlpc!mhauck sdchema!bam wivax!taylor

gi!frank microsof!gordonl sri-unix!billw yale-com!hickmott

hplabsb!soreff mprvaxa!shinbro sytek!blk zinfandel!nyles

ihuxe!ryl nmtvax!greg tekcad!keithl

I do not enjoy violence, but I have ways of maintaining control.

net.suicide is dead! Long live net.suicide!

2. mhuxt!crose

1983 febr. 7, 07:37

Hírcsoportok: net.suicide

Feladó: mhuxt!crose

Dátum: Mon Feb 7 00:37:50 1983

Helyi: 1983 febr. 7 H 00:37

Tárgy: Re: Coup d"Etat

Továbbítás | Nyomtatás | Egyéni üzenet | Eredeti megjelenítése | Üzenet jelentése | A szerző üzeneteinek megkeresése

Let us all, instead of commiting suicide, commit rabbit!bimmler.

3. tekcad!shauns

1983 febr. 11, 10:23

Hírcsoportok: net.suicide

Feladó: tekcad!shauns

Dátum: Fri Feb 11 03:23:06 1983

Helyi: 1983 febr. 11 P 03:23

Tárgy: Re: Coup d"Etat

Rest assured that net.suicide is still in the capable hands of its founding hacks. No coup has taken place. I repeat, no coup has taken place. We are however forced to step up security measures to prevent such civil disturbances in the future. rabbit!bimmler has been captured and tried. He has been sentenced to 30 years of hard enjoyment of living and his troops are now undergoing reprogramming in government facilities.

Until further notice, anyone posting articles to net.suicide without the net secret signoff will be considered enemies of the state and will be forced tosmile incessantly and talk about the weather. happy to be sooo depressed-

Shaun Simpkins

Adjunct Whoozit, department of disturbances,

net.suicide

uucp: {ucbvax,decvax,chico,pur-ee,cbosg,ihnss}!teklabs!tekcad!shauns

CSnet: shauns@tek

ARPAnet:shauns.tek@rand-relay

4. sdccsu3!iy47ab

1983 febr. 12, 14:08

Hírcsoportok: net.suicide

Feladó: sdccsu3!iy47ab

Dátum: Sat Feb 12 07:08:02 1983

Helyi: 1983 febr. 12 Szo 07:08

Tárgy: Re: Coup d"Etat

Excuse me, but as long as I'm around, anyone who wants anything on this net that is reasonable can probably get it one. Hear me, fellow netters!

I have essentially unlimited numbers of accounts! If you want something on here, mail it to me. I'll get it on. Never mind evil bumbling CENSORS!!!!!

(flame off)

Lady Arwen of U.C.S.D.

After this brief interlude, the thread went back to discussing suicide. However, some typical reactions could be observed later on; bimmler became the focus of a discussion that is typical of such, mostly unmoderated, open forums that have regular posters and a sense of community. Some users on net.suicide thought bimmler was tactless and cruel, other thought he was a pain in the ass yet he galvanized the discussions. Some users started guessing at bimmler's identity, even joking that he was the first male ever to get premenstrual stress syndrome, or that he/she was androgynous. Others claimed they knew him and was furious because of his hiding behind a bimmler nickname when things got so serious (but even these users would not reveal his real identity).

In fact, some clues were soon to come to USENET. A pdf file was posted under the name of Elizabeth Bimmler in 1984, on “Unix Wizards”, explaining the Unix was taught on a master-disciple basis where disciples had to look for gurus (and there weren't many to find). The text names Rob Pike as one of the top wizards and gurus who belonged in the innermost sanctum of UNIX world, working at Bell Laboratories. In an interview with Slashdot (users) he says about these days:

“One odd detail that I think was vital to how the group functioned was a result of the first Unix being run on a clunky minicomputer with terminals in the machine room. People working on the system congregated in the room - to use the computer, you pretty much had to be there. (This idea didn't seem odd back then; it was a natural evolution of the old hour-at-a-time way of booking machines like the IBM 7090.) The folks liked working that way, so when the machine was moved to a different room from the terminals, even when it was possible to connect from your private office, there was still a `Unix room' with a bunch of terminals where people would congregate, code, design, and just hang out. (The coffee machine was there too.) The Unix room still exists, and it may be the greatest cultural reason for the success of Unix as a technology. More groups could profit from its lesson, but it's really hard to add a Unix-room-like space to an existing organization. You need the culture to encourage people not to hide in their offices, you need a way of using systems that makes a public machine a viable place to work - typically by storing the data somewhere other than the 'desktop' - and you need people like Ken and Dennis (and Brian Kernighan and Doug McIlroy and Mike Lesk and Stu Feldman and Greg Chesson and ...) hanging out in the room, but if you can make it work, it's magical. When I first started at the Labs, I spent most of my time in the Unix room. The buzz was palpable; the education unparalleled.”

If Usenet's net.suicide was a tribe, so was the Unix room at Bell Lab's.

Rob Pike went on to being a mainstream media celebrity, often appearing on the David Letterman Show. Although a computer science expert who now works at Google, he was much liked by the media because of his sarcastic wit – the very thing that started the first “bimmler” case on Usenet.

I don't know if Pike revealed his identity behind bimmler or others did it for him (see for instance this witty comment and the response by Lady Arwen):

“Feladó: cbosgd!ccf

Dátum: Wed Feb 9 03:38:15 1983

After an unusually long absence from this newsgroup, I find that I am forced to comment on rabbit!bimmler's bold move for control and the Rev. Dr. Pike's and Mr. Flandrena's well reasoned comments. While I am loathe to condone violence (real or implied) that is not self directed, I must confess a certain admiration of Bimmler's firm response to the tawdry articles that have polluted this group of late. Furthermore, one should not be distracted from the valid points raised by Pike and Flandrena despite the atrocious pedantry of their prose.

We have, it seems, a classic case of judging whether the end justifies the means. One would suspect that in a group dedicated to self destruction, the end would be the sole object of interest. Bimmler, Pike, and Flandrena, on the other hand, take the controversial stand that the means are also important, if only to serve as a fond memory of the good taste and discretion of the nearly departed.

While it is rumored that Mr. Flandrena's support for this position is grounded in the political realities of his DMTS campaign rather than deep personal conviction, the integrity of Mr. Bimmler and the Rev. Dr. Pike is certainly beyond reproach. Yes, we need a strong leader in these troubled times. I, for one, support Mr. Bimmler and await that dark day when self demolition regains its rightful position at the apex of our culture. Until then, Mr. Bimmler's firm, yet benevolent, hand will guide us. Stay the course!

Let those who think otherwise make a statement with their life (as Mr. Bimmler has often done). Perhaps 6 months in the Karen Carpenter Diet Program will shed not only pounds but also illusions.

<--- chuck --->

cbosgd!ccf

BTL Columbus

A beszélgetés témája megváltozott. Az új téma : "The Coup d"Etat"

sdccsu3!iy47ab

I'm sorry, I didn't make myself correctly clear. I think this newsgroup has two readerships / i.e. serious and intellectual discussers, and creative and inventive black-humorists. Now if these two groups exist in large number (and they do) it is truly unfair to simply 'eliminate' one group just because you don't like it. Perhaps we ought ask the humorists to put the :-) in the Title so that serious discussers can say 'n' and not read it. Beyond that, censorship is censorship and I'm sorry -- while I generally read the serious stuff myself, I simply cannot approve. Lady Arwen”

DMTS stands for Distinguished Member of Technical Staff; Bob Flandrena was a pal of Rob Pike – it shows clearly that anonymity on USENET was less than complete.

Lady Arwen in the discussions above raises at least two important questions concerning internet communications. The first is the issue of “censorship”. As a free information supporter, she suggests that no content should be censored, despite the uproar Bimmler caused in the community of net.suicide. The second suggestion, to check the attitude of a poster, is even more interesting. She asks for a :-) sign that would make it easier for serious posters to ignore the offending content. Nowadays in internet forums many such signals exist, the most commonly used, besides smileys, is OFF and ON, showing respect for the ongoing conversation while indicating a remark that does not strictly belong to this conversation. Lady Arwen is also interesting in that she uses a handle (screenname, username) taken from The Lord of the Rings, and despite the USENET protocol that showed posts by the registration name of the user, she used it in each and every article submitted.

Where there are names (even if only handles) and hurt feelings, structural equivalence gives way to group cohesion (and its problems). I regard this (and other disputes) on internet forums not as a consequence of anonymity; on the contrary, they are the consequence, and a signal, of emerging strong ties between participants. Future research could examine if forums with regular participants tend to have more such issues and even flame-wars – all which should, according to my argument, be a sign of weak ties or peer consciousness transforming into strong ties and personal relationships. In a cohesive group, as net.suicide, Founding Fathers have no more authority than individual members, as Lady Arwen clearly put it.

The comments demanding "bimmler" to reveal his identity (which, in this case, means to show his 'real' nick behind a second nick, not to post his CV online) are also interesting in this respect. Reputation-testing is only possibly if we have a visible trail of the person whose reputation we are interested in. If risky or offending behaviour is masked by an assumed name (that is a second or third nick), it will not affect the first persona's reputation. This is seen as so unfair that it provokes regular wars against new nicks (users with new names) who meddle with the affairs of established nicks.

Some services – one example is Index Forums that I'll discuss next – introduced precautionary measures to prevent easy nick multiplication. Frequency of registration from a specific IP can be restricted, newly registered nicks might have to wait five minutes for their post to appear and between each posts, posts by nicks under a specified number of posts will not appear at all, etc.

Another tribal war was Tom Mandel's case in a much more closely knit community, The Well. The story started in the early days of The Well in 1985 and ended with Mandel's death in 1996 -- that he announced on The Well (after coming back from a self-imposed exile):

> It's bad luck to say goodbye before it's time to do so and there's no point in embracing death before one's time, but I thought maybe I'd sneak in a topic, not too maudlin I hope, in which I could slowly say goodbye to my friends here, curse my enemies one more time &LTwell, not really worth the trouble, actually,> and otherwise wave a bit at the rest of you until it's just not time to do so any more.
>
> I could start off by thanking you all, individually and collectively, for a remarkable experience, this past decade here on the WELL. For better and for worse-there were a lot of both-it has been the time of my life and especially a great comfort during these difficult past six months. I'm sad, terribly sad, I cannot tell you how sad and griefstriken I am that I cannot stay to play and argue with you much longer. It seems almost as if I am the one who will be left behind to grieve for all of you dying...

These are heart wrenching sentences, not quite expected from someone who enjoyed himself by creating havoc on The Well. But while here Mandel followed Well etiquette in being “nice” (and drew many declarations of sympathy), he added his own solution to be remembered as he wanted to be.

he also devised a scheme with a Well friend named Bill Calvin for programming a Mandelbot, an agent that would pop up at random on The Well, posting to conferences with prefabricated, entirely characteristic quotations. Mandel had chuckled at the thought. A week before he died, he posted this to the My Turn topic:

> I had another motive in opening this topic to tell the truth, one that winds its way through almost everything I've done online in the five months since my cancer was diagnosed. I figured that, like everyone else, my physical self wasn't going to survive forever and I guess I was going to have less time than actuarials allocate us. But if I could reach out and touch everyone I knew on-line... I could toss out bits and pieces of my virtual self and the memes that make up Tom Mandel, and then when my body died, I wouldn't really have to leave... Large chunks of me would also be here, part of this new space. **---- ~;-};-)(;-0/;-) ----**

The Well was created by a handful of people with the explicit purpose to create a community where intelligent and lively discussion could thrive. It used a simple software (accessible by the very low bitrate modems of the time), a threaded conversation engine. Anyone could start a “conference” and others would join in. Somewhat later these features were complemented by email and a type of instant messaging called “Send”. Users could freely chose their sign-up name that always appeared in their posts but they also experimented or played around with other pseudonyms, without hiding the original screen name.

As the first director puts it in the *Wired* feature that is the best source for the history of the Well:

> "The kind of ecology that we wanted to build on The Well was intelligent people with diverse interests who were sufficiently outgoing and extroverted that they would be naturals in the medium, I don't think we had an a priori knowledge of exactly what it was going to turn out to be, but we had a pretty good idea about what its potential was and how to manipulate it into realizing that potential. And a lot of that manipulation was by staying the hell out of the way at the right time. The Well didn't just evolve, it evolved because we designed it to evolve."

(http://www.wired.com/wired/archive/5.05/ff_well.html?pg=5&topic=)

McClure was, for most of his life, one of the gatekeepers at a (real life) hippy commune called The Farm and it seemed a logical step for Stewart Brand, founder of The Well to hire him.

Howard Rheingold, mentioned below, also started his online life (in the sense of Sherry Turkle) on the Well:

> "The Well took over my life. It's this territory where you know your behavior is somehow obsessive and taboo in the Protestant sense, that you should be working, that there's something sick and dehumanized about spending time doing this, but you also know that it's sociable, and you're doing it together. That was the unholy attraction of it."

Isn't this account very much like an adult describing his participation in a cult or a subcultural gang as a teenager? Although participants of the Well were working adults, their relationship to the Well and thereby to each other was characterized by both intense loyalty and internal tension. The Well mostly attracted users from the San Francisco Bay area and soon they started organizing parties to meet face-to-face. Any outsider who cannot make it to the parties tended to get more and more ignored in the conversations. This pattern is fully consistent with early research on locality-bound ties and also the tribal loyalty described by Maffesoli and his interpreters.

Tom Mandel played the part Bimmler took on in suicide.net on Usenet. He provoked, argued, with sarcastic wit, and used the private channels (email and "send") to launch vicious and personal attacks on people he had some issue with. He especially detested the notion that The Well was a community. "By being against the nice police and touchy-feely crowd, he sort of became a fixture," says Gerard Van der Leun, (boswell) on The Well and a friend of Mandel's."

Mandel had a colleague with whom he became intimate. She signed up on the Well under the name of Nana. They announced their engagement on The Well. But Mandel then backed off, what is more, started attacking Nana, including starting a conference called "A Journey into Nana's Vulva' at the time when Nana was sick with breast cancer. On top of all this, Mandel, who had administrative privileges, misused them to block users he did not like and when his account was suspended, he wiped out entire conferences.

With Mandel, Fig and Tex found themselves bending what flimsy rule structure there was to encourage people to adapt to one another's eccentricities. As Stewart Brand once put it, "The theory going in was that everybody plays until we find out what is unplayable behavior." The staff's active efforts to promote tolerance stretched the system's capacity, Fig recalls, "to absorb the extremes of individual behaviors." But how far could it bend before breaking? The experiment was exhibiting a certain Frankensteinian quality; the very forces that gave the community its vitality were threatening to become its undoing.

Finally, Mandel wrote a script that deleted everything he ever wrote on The Well. This was in many ways an extreme act of violence.

Mandel had been posting almost hourly for years; his conversations wove through most corners of The Well and its history. While it was true that, in the end, people owned their own words and were free to do with them as they pleased, even one person's deletions left Swiss cheese-like holes in The Well's collective memory. (Mass scribbles were rare, but two years earlier, a Well Being named Blair Newman had executed one, after which he'd committed suicide. Newman's death - which morbidly highlighted the continuity between the virtual and physical worlds - was the first in the community of active members of The Well.)

It was Tom Mandel's case that brought this internal tension to a point where the community – loyal to The Well but dispersed in its different conferences – had to form an opinion and act. The fact that Tom Mandel was a "problem" or simply was "Tom Mandel" and that Nana and Tom Mandel had "a thing" became common knowledge, even if by then the Well reached the (unheard of) membership of 3000. Well Being (as they referred to themselves) was someone who knew who Tom Mandel was and could relate in one way or another to his case. The others, even if posting, were outside the community, lacking access to the common knowledge defining the insiders of the Well.

Cory Doctorow who we met in the chapter on reputation economy, in another novel titled *eastern standard tribe* (2004, Tom Doherty, New York), describes tribal behavior (again, assuming it is extended to a whole world, or at least to power players in that world). Tribal behavior in his novel is characterized by always-online communication between tribe-members who work together (but also sleep together) in a conspiratorial way, competing against other tribes. Eastern Standard Time refers to the Boston timezone – our protagonist works in England but keeps his circadian rhythm synchronized with EST so that communication can go on uninterrupted with Boston tribe-members. His story is about membership, ambition,betrayal and power relationships within a tribe. Once leaving a tribe, there is no other option than joining another that will defend you against your former tribe.

> Tribes are *agendas*. Aesthetics. Ethos. Traditions. Ways of getting things done. They're competitive. They may not all be based on time zones. There are knitting Tribes and vampire fan-fictionTribes, but they've always existed. Mostly, these tribes are little more than a subculture. It takes time zones to amplify the cultural fissioning of fan-fiction or knitting into a full-blown conspiracy. Their interests are commercial, industrial, cultural, culinary. A Tribesman will patronize a fellow Tribesman's restaurant, or give him a manufacturing contract, or hire his taxi. Not becae of xenophobia but because of homophilia: I know that my Tribesman's taxi

will conduct its way through traffic in a ways that I'm comfortable with, whether I'm in San Fransisco, Boston, London or Calcutta. I know that the food will be palatable in a Tribal restaurant, that a book by a Tribalist will be a good read, that a gross of widgets will be manufactures to the exacting standards of my Tribe. (…) There's a lot of laming an splitting and vitriol int he Tribes. They are more fractured than a potsherd. Tribal anthropologists built up incredible histories of the fissioning of the Tribes since they were first recognized – most of 'em are online; you can look them up. We stab each other in the back routinely and with no more provocation than a sleepdep hallucination. (…) „Baby", Lucy said, rolling her eyes again, „you need some new meds." Could be," I said. „But this is for real. Is there a comm ont he ward? We can look it up together." „Oh, *that*'ll prove it, all right. Nothing but truth online." "I didn't say that. There're peer-reviewed articles about the Tribes. It was a lead story on the CBC's social science site last year."

And in fact, *there are* peer-reviewed articles on Tribes (see References). There might have been an article on CBC' social science site back in 2004. Certainly there is one that post-dates Doctorow's novel: http://www.cbc.ca/spark/2009/01/interview-seth-godin-on-tribes/. Doctorow's novel started with an article, commissioned by Wired (Issue 9.11 | Nov 2001). It was a piece on how circadian rythms define group boundaries for expats. Doctorow profiles some people – who might not even know each other – as belonging to the Tribe of Eastern Standard Time because they have to live their lives according to the time-zone of their employers – they are in constant communication with them. This is typical structural equivalence – yet the novel transforms this structural equivalence into tribal ties. I do think that this was not poetic license: this is what actually happens on most internet sites without explicit purpose (hanging out, being interested in a topic is not a purpose), with quasi-anonymity (that becomes unraveled in iterated interactions) and with a core membership. What follows is individual resistance by core members to outside control attempts without a means to coordinate behavior and cooperate. Online tribes will never institutionalize, even to the very minimal sense of subscribing to and maintaining shared principles. They are about loyalty, not principles.

In Acknowledgements Doctorow writes:

"This novel was workshopped by the Cecil Street Irregulars, the Novellettes, and the Gibraltar Point gang, and recieved excellent feedback from the first readers on the est-preview list (…) Thank to my coeditor at Boing Boing and all the collaborators I've written with who've made me a better writer. Thanks, I suppose, to the villains of my life, who inspired me to write this book rather than do something ugly that I'd regret."

Whatever the final judgment on them, “tribal” groups are characterized by the fact that, in want of hierarchy and institutions, they maintain themselves by constant communication. It is understandable why an always-online world (as the world had become by 2006, with mobile computing) seems the perfect place for new tribalism. As Howard Rheingold put it in his very successful book, *Smart Mobs,*

> “Smart mobs emerge when communication and computing technologies amplify human talents for cooperation. The impacts of smart mob technology already appear to be both beneficial and destructive, used by some of its earliest adopters to support democracy and by others to coordinate terrorist attacks.The technologies that are beginning to make smart mobs possible are mobile communication devices and pervasive computing - inexpensive microprocessors embedded in everyday objects and environments. Already, governments have fallen, youth subcultures have blossomed from Asia to Scandinavia, new industries have been born and older industries have launched furious counterattacks.”

(http://www.smartmobs.com/book/book_summ.html)

Hacker ethos: a meritocracy of peers

This takes us to another story, again a story from the early days of the internet. It is not about what damage hackers proudly inflict on well guarded institutions when they disclose their weekness (hacking) or the kind of cheating is going on out there to hijack potential customers (pharming) or, even worse, hijack their credit card numbers (phishing), but something about the very root of internet culture. These are risks and there are services, usually integrated in browsers or antiviral software, that try to warn the user if s/he is planning to access a dangerous (looking) site. There are seals now not only for online businesses or contents but any kind of website. Users can identify "trusted websites". As it should be apparent by now, I don't think such risks belong to my main argument, even if the word "trust" appears here and there. In some cases, however, such as spam recognition peer communities do have an important part when they identify – in whatever means – inappropriate content and submit their opinion to a pool of opinions that acts as a database and blocks content that was identified as offensive.

I chose to describe the hacker world because some of the – now taken-for-granted – characteristics of what is called online ethics or netiquette, the rules of conduct that are regarded as the norm in internet communication, derive from the very hacker culture that is nowadays regarded as a source of threat. Hackers and their self-selected spokesmen therefore insist that we need to draw a clear line between "legitimate" or "white" hacking and bad hacking that hackers prefer not to call hacking at all – they use pharming, phising, cracking instead to refer to individuals who engage in unlawful conduct.

The first community-based CMS-s (Computer Mediated Systems) were mailing lists and later "bulletin boards". Ethan Zuckerman, one of the internet pioneers jokes that „by 1975, mailing lists were invented – MsgGroup by Steve Walker was the first, and, wonderfully, the second archived message from the list is an apology from the sysadmin for his lack of responsiveness… a wonderful trend that continues to today. Shortly after, a list called SF-Lovers emerged as the most popular list – geek culture trumping pure technical geekery, as it still tends to today." (http://www.ethanzuckerman.com/blog/2006/05/12/a-history-of-digital-communities-in-seven-minutes/).

BBS-s were the centers of geek culture as well as technical geeks – hackers. A user connects to a Bulletin Board System allows using a terminal program (even early versions of Windows had a "Terminal" application) and a modem, on his phoneline. As with many other services, mailing list access and BBS access was mostly free. Zuckerman relates on his personal website that he had tried his hand in 1994 at a content producing company, Tripod, where he would have placed „survival information" for young people who could retrieve it for some fee. It is not insignificant that there is a popular websites nowadays called "LifeHacker", now part of the Gawker group, and it does just what Zuckerman wanted to do: explains how to do things in your life. However, it is supported by advertisement. I'll return to the "hacker" in the title in a moment. As for Tripod, no one was willing to pay for internet content – this has not changed, despite all evolution and several magnitudes of growth – finally he ended up offering Tripod as a service for webhosting, much like GeoCities.

The slogan „information is free" or „ideas are free" was born with the internet and popularized by such pioneers as Richard Stallmann (the founder of Free Software Foundation) and John Perry Barlow (founder of FFF, see below). This is a rather ambiguous term. Information *was for free* (although of course owning and using a computer and a telephone had costs, and operating servers was even more costly). The early (pre www) internet was for the technically savvy, who easily understood scripting and used command lines as a native language. However, in Barlow's idea it was free to travel in the information economy – this is the ideology that drives Wikileaks, founded by Julian Assange. While content *for free* is the painful norm for content providers (especially costly content such as mainstream journalism), while taken for granted , *liberated content* has an enormous appeal – this is why Assange has such a faithful following and an important impact on the ethical debates concerning the internet and content published there. As of today, it seems Assange is winning this battle. Since the publication of several diplomatic papers, Wikileaks become a source for several mainstream news outlets, we might say a *trusted* source. Assange has roots in the hacker culture – hackers who simply want to liberate content that is hidden on top-security servers.

The idea of a "hacker ethic" was formulated in 1984, in Steven Levy's book, *Hackers: Heroes of the Computer Revolution* (Anchor/Doubleday 1984). Levy identified six major pillars of the hacker ethos: 1. Access to computers - and anything which might teach you something about the way the world works - should be unlimited and total. Always yield to the Hands-On imperative!; 2. All information should be free.; 3. Mistrust authority - promote decentralization; 4. Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or

position.; 5. You can create art and beauty on a computer; 6. Computers can change your life for the better.

We meet here several of the ingredients that made Wikipedia, Daily Kos or (se below) GeoCities a community. But it was hackers who really saw themselves as a meritocracy of peers, with strictly equal opportunity to hack, and different talents to do so. For hackers, mutual recognition was the social glue that tied geek-types, sitting up all night by their computers – an image memorialized by several blockbusters to come, and turned into a nightmare recently with game and internet addiction problems. The recent success of the *Girl with the Dragon Tattoo,* and in general the best selling mystery series of the late Stieg Larsson, shows that the image of the hacker can come to life, in a romanticized way, in 2006, twenty years after it actually took roots in European , American and Australian culture – even though its founding documents, and major personalities, are now almost forgotten by "social software internet" and its users.

Hacker ethics started emerging at MIT in a student club that called themselves "The Hacker Club", who hung around the computer room at night and were bored with their studies otherwise. Marvin Minsky, one of the legendary minds behind the study of articifial intelligent, the member of the MIT faculty at the time, let them be and do what they wanted to do. The American Department of Defense was taking an interest in ARPA (what we know now by the precursor of the internet) and ARPA paid MIT to hire developers for a project named **MAC** . MAC stood for Multiple Access Computing and Machine Aided Cognition; the goals of these projects were to have several users sharing a computer, and to make it simple for users to take advantage of the computer's resources. The original hackers at MIT were, among others, Alan Kotok, Stewart Nelson, Richard Greenblatt, Tom Knight, and Bill Gosper and their cult book was *Gödel, Escher Bach* by Douglas Hofstadter whose ideas we have already explored.

One of the chroniclers of hackers, Eric S. Raymond (known as ESR) maintains a text document called *The Jargon File.* It was last edited in 2003 and despite all the frenzy over Lisbeth Salander nowadays there very few references to it on the internet at large – I checked the links pointing to the file and sadly Google found only 100 other sites linking directly to the original Jargon File (contrast this with millions of users on social software services who discuss the Millenium Trilogy and millions of fans of Lisbeth Salander).

The File contains a composite portrait of "J. Random Hacker" the traits for whom were collected from about a hundred Usenet messages submitted for this purpose. This, for example, specifies that

"Hackers are 'control freaks' in a way that has nothing to do with the usual coercive or authoritarian connotations of the term. In the same way that children delight in making model trains go forward and back by moving a switch, hackers love making complicated things like computers do nifty stuff for them. But it has to be their nifty stuff. They don't like tedium, nondeterminism, or most of the fussy, boring, ill-defined little tasks that go with maintaining a normal existence. Accordingly, they tend to be careful and orderly in their intellectual lives and chaotic elsewhere. Their code will be beautiful, even if their desks are buried in 3 feet of crap. (…) Hackers are generally only very weakly motivated by conventional rewards such as social approval or money. They tend to be attracted by challenges and excited by interesting toys, and to judge the interest of work or other activities in terms of the challenges offered and the toys they get to play with."

About their education and politics, it says:

"Nearly all hackers past their teens are either college-degreed or self-educated to an equivalent level. The self-taught hacker is often considered (at least by other hackers) to be better-motivated, and may be more respected, than his school-shaped counterpart. Academic areas from which people often gravitate into hackerdom include (besides the obvious computer science and electrical engineering) physics, mathematics, linguistics, and philosophy. (…) Hackers are far more likely than most non-hackers to either (a) be aggressively apolitical or (b) entertain peculiar or idiosyncratic political ideas and actually try to live by them day-to-day."

Their typical interests are "science fiction, music, medievalism (in the active form practiced by the Society for Creative Anachronism and similar organizations), chess, go, backgammon, wargames, and intellectual games of all kinds. (Role-playing games such as Dungeons and Dragons used to be extremely popular among hackers but they lost a bit of their luster as they moved into the mainstream and became heavily commercialized. (…) The typical hacker household might subscribe to *Analog*, *Scientific American*, *Whole-Earth Review*, and *Smithsonian* (most hackers ignore *Wired* and other self-consciously 'cyberpunk' magazines, considering them *wannabee* fodder)".

An interesting section on "gender and ethnicity" has something to say about their idea of personhood as well:

"When asked, hackers often ascribe their culture's gender- and color-blindness to a positive effect of text-only network channels, and this is doubtless a powerful influence. Also, the ties many hackers have to AI research and SF literature may have helped them to develop an idea of personhood that is inclusive rather than exclusive — after all, if one's imagination readily grants full human rights to future AI programs, robots, dolphins, and extraterrestrial aliens, mere color and gender can't seem very important any more."

The same open mindedness – or lack of clear boundaries and an indifferent attitude to the established rituals and rules of social situations – is typical of their sexual life as well (on which

the Jargon File has yet another section) – they might be gay, bisexual, promiscuous or simply they might not care what they are as long as they are left alone.

Hackers used handles or team-names which constituted their online identity. It typical rather than rare for old-fashioned hacking to include references to the online persona of the hacker – they had intense pride in their achievements, and mutual recognition formed a bond between them, created reputations (in the old IRL sense – without any mechanism) and a strong sense of merit. Even though hacker ethos is exclusive to a small group of people and survives mainly in open source computing, the type of identity that it created – alongside MUD's, open mailing lists or early online communities such as The Well – is, I will argue, an important ingredient in online identity.

Hacker culture can be interpreted in the framework Erving Goffman theory of the presentation of the self and everyday rituals. It is obvious that hackers wanted to differ from "black suit types" and "Microsoft types" as well as "cuties and wannabees" – they regarded themselves as authentic outsiders. As such, they established their own communication rituals (a lingo the Jargon File describes), communication channels (mostly BBS-s), ethical norms (see Levy) and basic social concepts of merit, decency, personhood etc. Flaming is not in style for hackers, however, doing things "for fun" that are distructive or damaging for others is very much part of the hacker ethic.

The process whereby some traits of personae of hackers and other geeks survive in internet communication is explained if we look at the evolutionary nature of the internet. New users who entered any service had to rely on seniors who provided guidance in FAQ-s or in direct replies to questions relating to a given service (which could be just about anything where online personae interact). Therefore their sense of identity, their principles and their language left a lasting mark on how new users perceived their roles and the rituals or rules of a given service or community, and, though in modified form, passed these on to new generations of new users. This evolutionary formation of online identity of course applies mostly to internet formats that had roots in "early days" internet. However, as I showed above, many services do have such roots, even direct links through people, to early forms. Steven Wozniak relates how he found an article in Esquire Magazine on phreakers – though it was fictionalized – and showed it to his friend, Steve Jobs, and how they set out to try phreaking themselves.

"I read an article in Esquire Magazine. It was about the October edition in 1971. The article was entitled "Secrets of the Blue Box--fiction" by Ron Rosenblum. Halfway through the article I had to call my best friend, Steve Jobs, and read parts of this long article to him. It was about secret engineers that had special equipment

in vans that could tap into phone cables and redirect the phone networks of the world. The article had blind phone phreaks like Joe Engessia Jr. of Nashville, and the hero of them all, Captain Crunch. It was a science fiction world but was told in a very real way. Too real a way. I stopped and told Steve that it sounded real, not like fiction. They gave too many engineering details and talked on too real a way to have been made up. They even gave out some of the frequencies that the blue box used to take control of the international phone network. The next day was Sunday. Steve and I drove to SLAC (Stanford Linear Accelerator Center, the same place the Homebrew Computer Club would meet 4 years later) because they always left a door or two unlocked and nobody thought anything about a couple of strangers reading books and magazines in their technical library. Finally we found a book that had the exact same frequencies that had been mentioned in the Esquire article. Now we had the complete list."

(http://www.woz.org/letters/general/03.html).

Wozniak and Jobs built the blue box, then went on to found Apple Computers.

Another important pioneer, Richard Stallman, the founder and prophet of Free Software Foundation that promotes a specific software licence (GNU) also started his MIT student days with some hacking. He found it outrageous that people who logged on MIT's networks should use passwords so he hacked the system and all students, faculty and staff who tried to log in found a message from him on the screen: "It is stupid to use passwords". His motives were entirely pure, grounded in his conviction that closed systems and the lack of information sharing is detrimental to the health of society.

In *Copyright Does Not Exist,* a book-length history of hackers and internet pioneers, written by Linus Wallei and translated into English by (chacteristically) "nirgendwo" (http://home.c2i.net/nirgendwo/cdne/mainindex.htm), the author tells the story of a hacker girl who bears much resemblance to Lisbeth Salander, the heroine of the *Millenium Trilogy*. Linus Wallei is of Swedish nationality, born in 1974, and wrote the first version of *Copyright Does Not Exist in* 1994. An update followed in 2000.

Susan/Susy Thunder (born in 1959 as Susan Headley) was a notorious hacker who had an important part in the first "crackdown" on hackers (Sterling 1996), and – if we believe Wallei's account, she could have served as the model for Lisbeth Salander. As yet I do not know of any publication though that would comment on this similarity – this might be explained by immense divide between mainstream book and movie culture and hacker culture. As the creator of Salander is dead, it will remain an unresolved question. What is undisputable is that the author's fictional ego has personal characteristics that fit very well with J Random Hacker's description in the *Jargon File.* And this is exactly why readers trust the protagonists and love

them: they are outsiders to the nasty world of business and politics and liberators of their secrets.

Susan Thunder **–** claimes Wallei –

> "was a textbook example of a maladjusted girl. She'd been mistreated as a kid, but was of the survivor kind. She became a prostitute as early as her teens, and earned her living working LA brothels. On her time off, she was a groupie, fraternizing with various rock bands. She discovered how easy it was to get backstage passes for concerts just by calling up the right people and pretending to be, for example, a secretary at a record company. She became an active phreaker at the very end of the 70's, and was naturally an expert at social engineering."

Indeed, Headley later became *the* "expert" on the "social engineering" branch of hacking. "Social engineering" means manipulating personal contacts and relationships into revealing information about computer systems or simply stealing their accounts. This shows us that hacker culture was not above using trust in personal relationships as a means to gain access to information. Yet this is not the Mata Hari type spying – hackers manipulate for the benefit of their group that is definitely outside and opposed to political or commercial powers. The hacker has to trust members of the group to operate successfully (we see more about this in the chapter on tribes).

> "Susan's specialty was attacking military computer systems, which gave her a sense of power. To reach her objectives, she could employ methods that would be unthinkable for male hackers: she sought out various military personnel and went to bed with them. Later, while they were sleeping, she could go through their clothes for usernames and passwords. (Many people kept these written down on pieces of paper in order to remember them). (...) It was probably Susan who broke into U.S. Leasing's systems and deleted all the information off one computer, filling it with messages such as "FUCK YOU FUCK YOU FUCK YOU", and programming the printers to continuously spit out similar insults. Among all the profanities, she wrote the names Kevin and Ron. The incident led to the first conviction of the legendary Kevin [Mitnick]", also known as Condor."

Headly testified against Mitnick when he went on trial in 1982 and then she went on testifying against other hackers related to the original "Roscoe Gang". They were not quite "white" hackers; they pursued "phreaking", hacking telecommunication systems (such as telephone exchanges) and occasionally stealing information or doing serious damage to computer systems. Yet Kevin Mitnick – who, after going underground while on bail – was on the most wanted list in the US for several years, and when caught and jailed, became a cult hero for hackers, so much so that hackers started a movement called HOPE and even initiated street

demonstrations to free Mitnick. The HOPE events were the first time that hackers actually came together IRL – all the hacking and group forming was done through wires up to that point.

Exploiting trust online

Susan Thunder is interesting for us because she used tools that are characteristic of professional spies, scam artists – and the type of internet user that we most fear. "Social engineering" might have served Susan Thunder to hack military systems but similar techniques can be used to seduce naïve users into sending money to a stranger to "retrieve funds or lost inheritance" in Africa, buy shares of companies that are supposed to be about to take off, or give credence to the "guaranteed satisfaction or your money back" type of promises that rely on the simple fact that most people, even if unsatisfied, will not pursue time-consuming tasks to get their money back if the amount in question is small enough, or simply click on videos or other content with sufficiently alluring names that create a cascade of spam. These are simple psychological tricks that often work and no amount of technology is able to keep us or our children safe from them. Experienced users, on the other hand, rarely, if ever, give any credence to such alluring e-mails or messages, even if they come – or so they seem – from trusted acquaintances.

The most typical example of such social engineering are chain e-mails. I always find it surprising that any of my respected colleagues, students or fellow writers etc can believe in chain e-mails, yet they do. Chain e-mails usually invoke some urgent problem – such as a baby needing blood transfusion or a missing child – and ask the recipients for help, as well as ask them to send the message further on to as many people as possible. Because these messages come from people we know and trust in the sense of general interpersonal trust, many of us fail to reflect on the fact that nothing actually verifies the content of the message.

Malicious instances of the same mechanism are when people are asked to cc a certain person or corporation – there was even one e-mail chain I ran into that claimed that if you pass on the message to a predefined number of people, Microsoft will reward you with a new notebook. You needed to cc Bill Gates – an excellent way to block an email account completely by ever renewing waves of spam if the owner of the account does not know how to defend himself (William Gates probably does know). Another malicious example is chain-letters within a service that also provides an internal messaging feature. Iwiw (described above) almost crashed when an e-mail chain was started (in the name of the CEO of iwiw) claiming that unless you send the message on to all of your "friends", the service (that is, iwiw itself) will have to

charge a fee. Although completely unfounded, the chain-letter went on for months, despite official anouncements on the iwiw homepage that it is both untrue and unfruitful as it causes the service to slow down through the heavy traffic it generates.

Although reading chain-letters is not a good way to spend one's time it is also almost inevitable that people will indeed read these letters (although they might have the sense to check the facts first before forwarding). A message's author is the most powerful signal one can get about the message's credibility. If the author happens to be a friend, colleague, student or anyone you actually know, with this signal you are reminded of your obligation towards your friends to take notice of their messages. It would be incredibly rude IRL as well as online to disregard messages from a friend. In fact, this might be the end of a friendship. Below we will see that tribal interaction is based on this notion.

It is not surprising that the recent trend in spamming is to hijack existing email accounts and send (or post) messages in the name of actual persons whose email can be verified and whose identity (or at least identity) can be checked. In a few weeks ago I received two proposals via email from gentlemen, referring to an ad I allegedly posted on craigslist offering the light kind of companionship. I did not bother to check the ad – I simply wrote them a polite letter about being sorry to disappoint them, and wrote to craigslist to check ads posted under my name. And, of course, I changed the password of my email account. My very behaviour also reflects my knowledge about the kinds of things that might happen: I did not suppose the gentlemen pretended to have seen an ad with my name. I knew it must have been an ad posted by some prankster with my email-adress and they were dupes while I was the target of the attack. Trusting and not trusting here, again, has less to do with elaborate mechanisms of trust than with a familiarity of the settings where risks might arise and the incentives of people to behave the way they behave.

Internet cowboys and the creation of the Internet community utopia

In the early days of internet optimism, John Perry Barlow, American poet who wrote the lyrics for the Grateful Dead band, self-described rancher and cyberlibertarian, or “a free agent and peripheral visionary” issued a “Declaration of Independence of the Cyberpace” when the American congress passed the Communications Decency Act in 1996. The Act proposed to regulate and punish pornography on the internet. It was partially overturned by the Supreme Court the next year. The final solution was an amendment to the Telecommunications Act that specified that internet service operators are not publishers – that is, they are not liable for the content published on or through their service. Pornography on the internet is a subject I will not deal with here, however, the Amendment has important lessons. In Hungarian law – as in most European legal systems – service providers are not liable for content, except a 'notice-and-takedown' action that bounds them to remove content that is illegal (according to the national criminal and civil code). I have to add here that since the adoption of a new media statute in December 2010, after I finished writing this dissertation, service operators *might* be punished for content they publish, however, the application of this regulation is not clear as yet.

In the U.S. the Digital Millenium Copyright Act and the Defamation Act provide similar external constraints in the US. Barlow and the Electronic Frontiers Foundation – the very name suggests how Barlow construed cyberspace: as the vast unclaimed land of Western movies – interpreted all legislation as a threat to the freedom of the internet (freedom in a libertarian sense). Here are excerpts from the original letter to like-minded peers, and excerpts from the Declaration itself.

> “After all, the Telecom "Reform" Act, passed in the Senate with only 5 dissenting votes, makes it unlawful, and punishable by a $250,000 to say "shit" online. Or, for that matter, to say any of the other 7 dirty words prohibited in broadcast media. Or to discuss abortion openly. Or to talk about any bodily function in any but the most clinical terms.
>
> It attempts to place more restrictive constraints on the conversation in Cyberspace than presently exist in the Senate cafeteria, where I have dined and heard colorful indecencies spoken by United States senators on every occasion I did.
>
> This bill was enacted upon us by people who haven't the slightest idea who we are or where our conversation is being conducted. It is, as my good friend and Wired Editor Louis Rossetto put it, as though "the illiterate could tell you what to read."
>
> Well, fuck them.

Or, more to the point, let us now take our leave of them. They have declared war on Cyberspace. Let us show them how cunning, baffling, and powerful we can be in our own defense.

We have no elected government, nor are we likely to have one, so I address you with no greater authority than that with which liberty itself always speaks. I declare the global social space we are building to be naturally independent of the tyrannies you seek to impose on us. You have no moral right to rule us nor do you possess any methods of enforcement we have true reason to fear. Governments derive their just powers from the consent of the governed. You have neither solicited nor received ours. We did not invite you. You do not know us, nor do you know our world. Cyberspace does not lie within your borders. Do not think that you can build it, as though it were a public construction project. You cannot. **It is an act of nature and it grows itself through our collective actions. You have not engaged in our great and gathering conversation, nor did you create the wealth of our marketplaces. You do not know our culture, our ethics, or the unwritten codes that already provide our society more order than could be obtained by any of your impositions.**

You claim there are problems among us that you need to solve. You use this claim as an excuse to invade our precincts. Many of these problems don't exist. **Where there are real conflicts, where there are wrongs, we will identify them and address them by our means. We are forming our own Social Contract.** This governance will arise according to the conditions of our world, not yours. Our world is different.

Cyberspace consists of transactions, relationships, and thought itself, arrayed like a standing wave in the web of our communications. Ours is a world that is both everywhere and nowhere, but it is not where bodies live.

We are creating a world that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth.

We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity.

Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are based on matter, There is no matter here.

Our identities have no bodies, so, unlike you, we cannot obtain order by physical

coercion. We believe that from ethics, enlightened self-interest, and the commonweal, our governance will emerge. Our identities may be distributed across many of your jurisdictions. **The only law that all our constituent cultures would generally recognize is the Golden Rule.** We hope we will be able to build our particular solutions on that basis. But we cannot accept the solutions you are attempting to impose."

This declaration – beyond a deep belief in a completely unregulated and anarchic utopia – clearly shows how important anonymity (as internet identity) was for early pioneers. Internet identity was citizenship in another country, another political community, where norms emerge spontaneously from interactions. This community ethos was the basis of the successful cases of community-based-trust solutions that I described above. However, this community was first construed as an emergent phenomenon. As I try to show throughout this paper, communities with stable frames that serve as reference points and thereby foundations of trust do not emerge spontaneously from the interactions of structurally equivalent peers: a founding father and some founding principles are needed to create the structure wich provides membership – having an account in an internet-based service does not constitute membership in a community.

Barlow later, in a 2004 interview with the publication *Reason* reconsidered his words that made him famous in an instant.

"Reason: I've been rereading some of your early '90s writings about the digital future, and you sounded a lot more optimistic then, with a much more "nothing can stop us now" attitude.

Barlow: We all get older and smarter.

Reason: Still, it seems to me you were mostly right. The Internet promise came true. We do have access to more news, viewpoints, opinions, cultural products than could have been imagined 20 years ago. Doesn't that make worrying about corporate media consolidation a rather antediluvian fear?

Barlow: You now have two distinct ways of gathering information beyond what you yourself can experience. One of them is less a medium than an environment -- the Internet -- with a huge multiplicity of points of view, lots of different ways to find out what's going on in the world. Lots of people are tuned to that, and a million points of view have bloomed. It creates a cacophony of viewpoints that doesn't have any political coherence at all, a beautiful melee, but it doesn't have the capacity to create large blocs of belief.

The other medium, TV, has a much smaller share of viewers than at any time in the past, but those viewers get all their information there. They get turned into a very uniform belief block.

> TV in America created the most coherent reality distortion field that I've ever seen. Therein is the problem: People who vote watch TV, and they are hallucinating like a sonofabitch. Basically, what we have in this country is government by hallucinating mob.
>
> It's a perfect set of circumstances to give us the time Yeats foretold, with the best having lost all conviction and the worst full of passionate intensity. In my heart of hearts I'm with you. I'm an optimist. In order to be libertarian, you have to be an optimist. You have to have a benign view of human nature, to believe that human beings left to their own devices are basically good." (http://reason.com/archives/2004/08/01/john-perry-barlow-20/4)

I quoted Barlow's passages and answers in full or almost full because the language is as revealing as the ideas expressed. What Barlow seems to be saying is that internet optimism was lost when old-internet-cowboys like himself realized that coordination is a crucial problem on the internet. You have "a cacophony of viewpoints" but you cannot create the "uniform belief block" of the television watching "hallucinating mobs". Television has a far greater power to create common knowledge, thereby solve coordination problems, than the internet.

In a way this is the gist of my argument in this paper, turned upside down. I try to argue that it is exactly because of such coordination problems, and lack of common knowledge, that internet users chose communities or chose to expose themselves (by providing their real name and other personal details). Reducing individual points of view to community norms and reducing multiple identities to one (which, increasingly, has an identifiable trail all over the internet) will reduce the "cacophony" by several magnitudes. If we add the scale-free nature of the internet and the emergence of hubs, common knowledge-based coordination actually becomes easier than through mainstream media.

We must note that the interview was given in 2004 – that is, about the time I specified as the first phase of social internet. Barlow – as a libertarian – could not (or would rather not) see an already ongoing evolution whereby a libertarian cyberworld will be eventually replaced by something that mirrors IRL social structures however, without institutions or domination (in Weber's sense) of an institutionalized state. More or less loosely affiliated individuals form groups with permeable boundaries and different degrees of loyalty and keep track of weak ties that help them bridge gaps between these groups.

If the Declaration was inspired by Western movies, the older Barlow feels threatened by the Matrix. I do not mean this as a joke: cult movies and books reflect ideas of pioneers and spread

them. These ideas then sometimes turn up again not as ideas of internet pioneers or thinkers but as internet services. This is another way of saying that the internet is a cultural phenomenon: it creates culture and reflects culture. Who could have thought in 1985 that in 2010 a hacker girl would be the idol of millions who never heard of hackers? Yet it did happen – though hackers of old might feel their story is romanticized and sold: to consumers whom they detest.

Founding fathers and the Facebook model

I hope it is obvious from the above stories that in many internet communities and services there were "Founding fathers" who drew inspiration from the earliest internet days and passed it on while creating services that came to dominate the web. Important examples are Wikipedia (James "Jimbo" Wales), various open software initiatives such as Free Software Foundation/GNU (Richard Stallman), or Linux (Linus Torvalds), traditional Role Playing Games (MUDs), most notably Richard Bartle, and even Ebay with Pierre Omidyar. Their values and norms are treated as guidelines (a kind of constitutional authority) even if they abstain from interfering in the affairs of the community/service they founded. In many services there are "gods" (admins, sysops, Unix wizards, moderators, RPG gods and wizards) who enforce these norms and rules. These founding fathers are revered and they go to the point of maintaining their reputation that they give away much of the money they earned (Pierre Omidyar), support their service and cause to the detriment of their personal lives (Jimmy Wales and Richard Stallman) and are always responsive to their user base – even if it means reading loads of emails every week (Richard Bartle) or are forced into constant flight (Julian Assange). These personal sacrifices – even after the founders are forced to pay more attention to their own needs – establish a deep trust in and a high reputation for the services. Anything that is done in the early spirit of the internet is regarded as more trustworthy. Consequently, anything that breaks with tradition creates questions and worries. No wonder that „old timers" such as Chris Anderson and danah boyd find Facebook the most dangerous phenomenon on the internet.

Zuckerberg – as opposed to the above founding fathers – does not appear to Facebook members as the wizard of the community he founded, although he has strong visions about it. We can argue that his ambitious plans cover many aspects of the internet, but he regards Facebook as an opportunity to create a new layer for the internet. The communication and language of Facebook is – as of now – strictly corporate, even if slightly more informal than most legal notices. There are no communication channels between sysops and users other than text boxs to file complaints or ideas. (Even Google runs a Google blog where developers comment on new features under construction as well as a FAQ where Google employees answer questions). Facebook prefers secrecy and a non-personal way of communicating with users. This often leads to complaints (such as the introduction of new features unannounced) and confusion concerning guidelines – some rules are less than obvious and there is no way to

ask for clarification. As Facebook offers egocentric features, seniority does not play any role and it is a matter of luck if an uninformed user has anyone among her acquaintances, or one or two steps removed users, who might answer a question. Minimal peer membership applies only to members of groups and there is a cup on the number a potential group might collect.

Facebook does have Principles (although you have to try hard to find them). They state:

Facebook Principles

We are building Facebook to make the world more open and transparent, which we believe will create greater understanding and connection. Facebook promotes openness and transparency by giving individuals greater power to share and connect, and certain principles guide Facebook in pursuing these goals. Achieving these principles should be constrained only by limitations of law, technology, and evolving social norms. We therefore establish these Principles as the foundation of the rights and responsibilities of those within the Facebook Service.

1. Freedom to Share and Connect

People should have the freedom to share whatever information they want, in any medium and any format, and have the right to connect online with anyone - any person, organization or service - as long as they both consent to the connection.

2. Ownership and Control of Information

People should own their information. They should have the freedom to share it with anyone they want and take it with them anywhere they want, including removing it from the Facebook Service. People should have the freedom to decide with whom they will share their information, and to set privacy controls to protect those choices. Those controls, however, are not capable of limiting how those who have received information may use it, particularly outside the Facebook Service.

3. Free Flow of Information

People should have the freedom to access all of the information made available to them by others. People should also have practical tools that make it easy, quick, and efficient to share and access this information.

4. Fundamental Equality

Every Person - whether individual, advertiser, developer, organization, or other entity - should have representation and access to distribution and information within the Facebook Service, regardless of the Person's primary activity. There should be a single set of principles, rights, and responsibilities that should apply to all People using the Facebook Service (my emphasis, EB).

5. Social Value

People should have the freedom to build trust and reputation through their identity and connections, and should not have their presence on the Facebook Service removed for reasons other than those described in Facebook's Statement of Rights and Responsibilities. (My emphasis, EB)

6. Open Platforms and Standards

People should have programmatic interfaces for sharing and accessing the information available to them. The specifications for these interfaces should be published and made available and accessible to everyone.

7. Fundamental Service

People should be able to use Facebook for free to establish a presence, connect with others, and share information with them. Every Person should be able to use the Facebook Service regardless of his or her level of participation or contribution.

8. Common Welfare

The rights and responsibilities of Facebook and the People that use it should be described in a Statement of Rights and Responsibilities, which should not be inconsistent with these Principles.

9. Transparent Process

Facebook should publicly make available information about its purpose, plans, policies, and operations. Facebook should have a town hall process of notice and comment and a system of voting to encourage input and discourse on amendments to these Principles or to the Rights and Responsibilities. (My emphasis, EB)

10. One World

The Facebook Service should transcend geographic and national boundaries and be available to everyone in the world (my emphasis, EB).

The language here reflects the old ethos, however, the meaning of old ethos statements is fundamentally modified. Take point 5. Reputation and trust building seem inappropriate terms here. Although we might argue that the fact that members two steps removed from ego can see ego's posts (if she chooses soo), it is streching the term trust to apply to this option. True, fan pages can be created but how is reputation built through fan pages? Only if we take account of Zuckerberg's vision – and the actual ways Facebook is used now in services *other* than Facebook – can we discover some meaning in this sentence. „Liking" is like „digging" (as described above) but here „likes" appear on the main page as well as on the page (service, content, etc) that is liked. It is not the reputation of members but the reputation of third party services that can be enhanced through Facebook tools. If we take reputation as a tool to promote trust, again, it is content outside Facebook that becomes more trustworthy (or at least more salient) as the number of Facebook likes grow (or it is shared frequently). It is hard to see

how a member can enhance her reputation or establish new trust relationships by simply acknowledging mutual ties or posting/sharing content. There is no tool – true to the egocentric nature of Facebook – to see whose contents proved valuable or interesting. Contributed content per se is not valuable at all, and the slim measure of popularity that exists on Twitter – the number of subscribers to the feed of a person – does not exist on Facebook.

Take point 9. It promises some form of collective decision making concerning new features or rules. It even calls it a townhall process which is obviously an inappropriate metaphor with 500k users. In fact, „townhall" process simply means that when a sufficiently large number of users protest against some new feature or new elements in the Terms, Facebook modifies it (as opposed to Yahoo in the Geocities case study). Observe the qualifications attached to the townhall metaphor: it is „notice and comment". This means that Facebook posts a notice and then users – if they notice the notice – can add comments.

Of course, we can say that Facebook in itself is not a community – despite the language – but a container for communities (groups being a fairly recent feature). Within such communities old internet ethos prevails – reputations and norms are being created, and there are founding fathers/mathers in the sense that they initiated a group and therefore are seen as the informal leader or someone who can adjudicate conflicts, if members cannot come to an agreement.

The limit on the size of such groups, and a larger limit on the size of profiles of individuals, even if reasonable from a technical point of view, does not make it possible for groups to rise (or fall) in popularity. The only pages where membership is unlimited are fan pages and institutional pages. You are required to pay if you want to create such a page.

What it means is that equality, point 3, simply means that anyone or anything can use Facebook with the same basic rights and responsibilites. It does not imply that users are peers – the only restriction is that a company or product page should avoid any self-advertising. You can do that, but you have to pay. This, of course, is a perverse interpretation of fundamental equality. Where Ebay protects small buyers, Facebook offers opportunities to members who can afford to pay. No wonder that time and again there is rumour that Facebook will collect fees from all members which Zuckerberg vehemently denies. Indeed, as we have seen, certain actions on the part of the operator/owner may lead to mass exit, even with a service of this size.

Yet Mark Zuckerberg did have some roots in the old culture of the internet. He had been a Harvard hacker first (though not the white kind). He is not revered but he is a fascination – not

so much for Facebook users as for people who watch with awe the exponential growth and addictive nature of Facebook.

He started as a hacker. It is said he started hacking when 8 (in the family home) wore a T-shirt with the inscription „hacker" on it and in a Techcrunch interview still calls the activity of their company „hacking" (see below). He never crossed the gap from being a hacker to being a public figure (as Assange or Stallman did), working for the good of all.

As we have just seen, his principles are not publicized as an invisible constitution of a founding father and his aims are personal and commercial, rather than communitarian. Still, despite his reputation of „the kid that got rich by a good – if stolen – idea", the journalist Jose Antonio Vargas who wrote the profile for the New Yorker says:

> „(…) One of the reasons that he has held on to (Facebook) is that money has never seemed to be his top priority. In 2005, MTV Networks considered buying Facebook for seventy-five million dollars. Yahoo! and Microsoft soon offered much more. Zuckerberg turned them all down. Terry Semel, the former C.E.O. of Yahoo!, who sought to buy Facebook for a billion dollars in 2006, told me, "I'd never met anyone—forget his age, twenty-two then or twenty-six now—I'd never met anyone who would walk away from a billion dollars. But he said, 'It's not about the price. This is my baby, and I want to keep running it, I want to keep growing it.' I couldn't believe it."

(http://www.newyorker.com/reporting/2010/09/20/100920fa_fact_vargas?currentPage=all#ixzz10B9AMmwJ)

The personal ethics and values of the founders have profound impact on the perceived norms of a service where usage implies some degree of membership-feeling. This is why critics often cite Zuckerberg's early communication pieces that became uncovered in a patent suit against him by his university classmates whose idea – they state – he stole while working for them. The 19 year old Zuckerberg who had just launched Facebook says in a recovered IM message that he has access to all kinds of personal information. He is surprised, he says, that people trust him with so many sensitive data and personal details – probably because they are "dumb fucks". This revelation came in a series of articles by BusinessInsider in May 2010 (http://www.businessinsider.com/well-these-new-zuckerberg-ims-wont-help-facebooks-privacy-problems-2010-5). By end of summer, Zuckerberg's reputation was so damaged that finally, after many plain refusals, he came out in a New Yorker interview on September 20th 2010 and said he deeply regretted those (and many other) words, had been immature, and now tries to live up to what he thinks is right. Soon a movie was produced – eventually winning two Oscars – which is based on the claims that Zuckerberg stole the idea of Facebook, deceived his clients and his friends, and has no scruples in general. The film did not damage Zuckerberg's reputation

seriously. Apparently, he never had a good reputation – and Facebook, as it is now, does not require a founding father. It is a service.

Nevertheless, by early October 2010, Facebook announced new features claiming that it was „listening hard and loud" to user requests. It seems obvious to me that a more personal way of communicating with Facebook users is a must to maintain peer membership feeling and reinforce the position of Facebook as a form of damage control.

Even though Facebook belongs to those enterprises of the social network period where users are far removed from the ethos of the early days and if they have norms, these norms usually come from their daily life and a consumerist culture, the credibility of the service can be still shattered and when the credibility of a service is shattered on the internet, it can easily fail, as we saw above with "whuffies" coming and going in Doctorow's novel. In this sense, internet services are all about trust, and grassroot democracy or cooperation as a community will rarely solve major credibility problems. My metaphor for this would be an invisible supreme court where the founding father(s) have lifelong decision powers. When a founding father leaves "the court", or faces accusations or allegations concerning his/her personal moral integrity, the community grieves and its faith can become shattered, or, on the contrary, the community decides to stand firmly behind its leader. This is what is happening to WikiLeaks, founded by another hacker, Julian Assange, founder of Wikileaks. He faces trial on account of two alleged rapes (but not because he disclosed state secrets).

As Facebook is not such a community that has a firm conviction that there are norms and honorable goals, Zuckerberg's personaly moral integrity is far less important.

Core members and seniors

The observations on founding fathers could be tested empirically by looking at how often "the founder" or "founding principles" are invoked in conflicts. The same applies to the role of seniors or core members. It is an important characteristic of a community based service how seniority is acknowledged by special badges, stars or administrative rights; and how often seniority implies authority in contested matters or problem resolution.

But even without any visible sign of seniority, members themselves often point to seniors when it comes to initiating a newcomer and introduce old members to new ones, commenting on the role of both.

Seniority within a community that had a fairly small user base in the beginning proved an effective (in fact, the most effective) way to enhance trust in new users towards other users and the content published by them.

Theoretical frameworks for building internet communities advise that community norm enforcement is more effective than strict control (Uwe Matzat 2005). This does not contradict the observations above. Founding fathers draft constitutions (form first norms) in cooperation with the first core members (core members are the group present when the community and its purpose was defined).

Core membership for Wikipedia in its early phase was about 200 individuals, according to Jimmy Wales, and even now – corroborating the well-known 20-80 rule, only 10% of Wikipedians constitute the group that accounts for 80 percent of all changes and editing (ibid). This core membership will transmit norms to newcomers and also enforce them. Core members will become later admins, forming an elite community within the broader community. Founding fathers are there as the source of "the law" and a final recourse but usually they abstain from interfering (and this is a known fact for both core and other members).

I cannot agree therefore with the arguments (based on Weber's institutionalization theory) that large communities develop institutions. Even in large communities, we have core members (by seniority and level of activity) but no chain of command, no reward system that is institutionalized and no fixed rules, only the first principles and their interpretation of it which can be and is contested by other core members or the community at large. This where Assange seemed to fail as collaborators accused him of arrogance and micromanagement. Although the

very nature of WikiLeaks inevitably requires more control and caution that, say, the running of Wikipedia, core members are essential to maintain the operation. (http://fluentnews.com/s/25937750)

Charismatic leadership and invisible constitutions work only as far as they are known and respected by new users. Social systems after reaching a certain size create signals of credentials like descriptions added to usernames, stars and other forms of acknowledgement. This creation of social signals can be referred to as "social engineering" (in the good sense) and serves to promote trust and reputation mechanisms where group knowledge through regular interaction or rumour would not be enough to establish credentials.

Holding a degree from a prestigious university is a social signal IRL – and having certain "friends" or a user number (which indicates seniority) or any badge that shows that a user is a "trusted reviewer" or a "most active member" are all signals to create the basis of seniority- and authority-based trust. It is not completely naiv: having a badge like this (unless the system is rigged) means the online persona was around for long enough to have a trail, a history, and they were granted such badges because other peers respected them.

On a still larger scale, with millions of users – like AOL – new users are confronted with the fact that they do not see or recognize signals. In such systems, many users become disgruntled and leave (because of newbies who do not respect tradition) or never enter (because they don't know how to behave and what can be expected to happen to them).

Here I simply described what I found while studying disputes and norm-enforcement in internet settings. My hypothesis was that "founding fathers", seniors and their principles are often invoked (without the actual law enforcement framework that belongs to a constitution and common law) and this serves as the main framework – an invisible constitution – within which disputes can be settled. The point here is that the founding father himself or herself is often asked to interfere and there are cases – such as the notorious case of "the internet rape" or some very serious Wikipedia disputes among senior admins – where founding fathers did indeed see it necessary to give their opinion.

Once the founding father or many seniors leave (being a volunteer god or a a wizard, or a supposedly immortal Supreme Judge with unlimited time can be rather tiresome) or sells the company, coordinated action is much less effective. Geocities and unmoderated forums show that what Jimmy Wales called – perhaps jokingly – refferring to his role, a "benevolent dictatorship", or what Max Weber calls charismatic leadership, is very important in internet

communities. Although I do not agree with !!!!! that such community-based services will inevitably enter the path towards the iron cage of burocratization, I do agree that communities are ephemeral and conflict ridden, and without charismatic leaders or invisible constitutions with wizards/moderators as its guardians, they dissolve or change in unforeseen and usually unpleasant ways with the entry of new users or a new owner (who behaves as owner, without assuming the role of charismatic leadership).

This group dynamics is of course observable in corporations as well as on the internet. However, in corporations, informal group-membership and ties serve not as guidelines for the whole corporation – corporations remain hierarchical, and necessarily so.

The exception to the rule is again Facebook. As I tried to argue, Facebook is not a community, despite being invented *for* a very real community. However, there are communities within Facebook where my conditions apply: in groups there are peers who contribute content that might be valued or rejected, who can be acknowledged or regarded as seniors, and there is one or several founders who define the first principles that apply, that are repeated to newcomers, and that can be modified if must.

VI. Conclusions – the uses of game theory in explaining internet reputation mechanisms and internet communities

The literature on trust generally agrees on the commonsense presupposition that trust is only important where there is some risk. Trust is an attitude that encourages people to face risks and trust-enhancing or trust-producing mechanisms are created to enhance trust. Trust has many interpretations or facets in the literature. Russell Hardin argues that trust can be interpreted as encapsulated self interest and is completely symmetrical with distrust. He claimes that other definitations are simply not instrumental in analyzing risk-handling as the individual's degree of generalized interpersonal trust (a personal characteristics) or trust that is fostered by emotional bonding is either unobservable, or can be broken down to instances of encapsulated self-interest.

Toshio Yamagoshi and colleagues provide a review of trust-related experiments in PD-type games. They test two hypotheses (Yamagoshi, 2008). The first hypothesis claims that cooperation in a group is explained by a degree of identification with the group that reduces individual "greed" (that is, the strategy that compels a rational actor to defect and run away with the money rather than to cooperate and honor conventions of respectable trading). The second hypothesis claims that although groups provide identity and bonds, it is not these bonds that explain in-group bias but a the fact that groups are a framework for generalized exchange – the form of exchange when your altruistic behavior or cooperation is rewarded by altruistic behavior towards you, although not necessarily by the same person but by another person with the same group membership. If you defect, you risk your membership (and thereby the benefits with it). A very common example of this is a rotating credit association.

The authors found, after conducting some new experiments on their own, that the most important incentive for cooperation is when a common knowledge condition is present. Persons who know that their partner in the game knows that they are of the same group tend to be generous. (As they used a Dictator game instead of PD, where an individual is given a sum of money and she is free to split it between herself and her partner, instead of cooperation we have generosity – an equitable or generous Dictator will give about 45-50 percent of the money to the partner). They established that Dictators are generous if they know that the recipients know they belong to the same group. (If only the Dictator knows that the recipient is a member

of the same group, the Dictator will not be more generous towards the recipient compared to another recipient from a different group).

When participants were asked what the most important factor had been in their decisions, they said the most important was what the recipient expected from them. If the recipient knew the Dictator was a member of the same group, the Dictator thought her recipient expected an equitable share, and obliged. Here even reputation was eliminated – it was not specified whether other members of the group would know the results of the transaction. Paticipants took for granted the norm of equitable conduct in a relationship within a group and *did not want to transgress*. This can be a reputation effect because your reputation within a group can be immediately affected (if there is rumour about how selfish you were). But – as other games, notable the Ultimatum game shows – equitable conduct can be rewarding because of the expectations of others, even if the experiment is not set up by first assigning each participant to a group, that is, conferring minimal membership (minimal membership in this experiment it was a preference for Kandinsky over Klee or vice versa).

The empirical results of Ultimatum games run counter to the basic principles of game theory or a theory of rational action, where rationality is defined as maximizing your utility (money, satisfaction, etc). Ultimatum games differ from Dictator games in that in the former the recipient can reject the offer in which case no participant will get any reward. Recipients tend to reject offers less than 45 percent (although the rational thing would be to accept any money they are given as it is pure gain and there will be no repeated interaction). The Dictator's offers in the above experiment and the recipients' reactions in empirical Ultimatum games converge around somewhat less than half of the whole sum – it seems peer relationships prior to the game have a more important effect than the game-theoretical construction of the game or the rational maximation behavior predicted by rational choice theory.

Experiments showed that structural equivalence is a sufficient criterium for people (or internet users) to claim membership in a group or have a group identity (such as cancer survivors, expats, geocity-residents or "eastern standard tribes"). *When structural peers know they are structural peers prior to a given interaction (that can be constructed as a trust-cooperation game) and this is a prior common with them (it is common knowledge that they were peers before the game), this prior knowledge will have a powerful impact on their decisions and the outcome.* After all, it is mostly students who are recruited to play the roles in these experiments and according to how they frame the game (I use "framing" here as a technical term, coming from Erving Goffman) they will adjust their behavior to the expections of others under the shared

frame. (About shared frames of social situations and their impact on the presentation of the self).

The situation of the Dictator in the first game is also instructive. If it is known that the Dictator is the Dictator, Dictators favour their own group. This is the basic game theoretical premiss behind the role of founding fathers.

I argued above that structural equivalence with regard to information is a minimal membership category. This is how television audiences, fan clubs or users of a given internet service – or users of the internet tout court – can have a minimal group membership. I am aware that this is an extremely low threshold for community organization. Yet, I think it occurs more frequently than it sounds. Take users of Apple products, regular shoppers at WalMart, people who like to build Lego robots and lay people who were diagnosed with an illness. They are all in an asymmetrical information relationship with Apple, WalMart, Lego parts and the medical experts on the illness even if their knowledge concerning the partner (and the subject) varies considerably. They also know that there must be others like them in this very minimal sense (as companies sell products and an illness might struck several or some other people). Such peers can form groups around common causes, although considerable effort is required and free-riding is an important phenomenon in such groups (or the potential beneficiaries of what the group achieves in getting more information).

The internet changes this minimal membership radically as soon as these structurally equivalent peers start looking for others on the internet, for the simple reason that peer membership on the internet can be (but not necessarily is) completely transparent and the costs for organizing collective action are lower *in case there is a core common knowledge and leaders who maintain it and take the lead for action*.

No wonder that Facebook Principle refer to a requirement of complete transparency – this was not an original tenet of the Facebook service (there hadn't been principles in the first place before some minor revolts took place). Transparency is something peers expect from a service that is – prima facie – a community. However, in commercially oriented services the role of the founding fathers and principles can be replaced by statements of the administrators.

Take for instance Prohardver.hu's efforts to track dishonest traders in its advertisement section. The core team of Prohardver.hu posts and at every potential transaction repeats the statement that there are such dishonest traders. They also set up a mechanism whereby users can report such traders. Users then have knowledge about mechanisms of trading but it is still

not common knowledge. However, when a blacklist is created, common knowledge arises (although it is more a high probability common knowledge for members than a strict common knowledge condition).

Reputation arises where structural equivalent peers have common knowledge about each other (the fact that they have reputations and these reputations can be seen by all, and all know that.. etc). “Whuffie” is such a reputation – it is written on your body, as it were, and you know that others know and you know that they know you know etc. A real-life example of such a “Whuffie” is skin color. Although skin color does not (or rather, should not) correlate with reputation, it is an example of common knowledge membership. And we know that skin color is an extremely powerful signal of minimal membership.

There are many such small-scale examples of minimal membership based on structural equivalence in everday life – people walking their dogs in a neighborhood recognize each other as people with dogs even if they do not know each other. They tend to chat about dogs but rarely introduce themselves or indicate their address, employment history or religious views. In fact, they do their best to avoid such subjects. Minimal membership is a safe way to keep the conversation flowing without establishing stronger ties. For dog walkers, it might become common knowledge after a while that there are other dog walkers in the neighborhood but not much else. These minimal membership categories are in themselves do not provide means for collective action or reputations that become part of common knowledge accessible to the given minimal membership group.

Now take websites that are dedicated to saving animals or tracking down stolen dogs. These websites provide easily accessible common knowledge for a given membership category. All they need is a mission statement (guiding principles) and core members who help answering questions of newcomers (on newcomers entering a minimal membership community with core members see von Münchow 2010). According to this quantitative analysis of USENET, the best entry strategy is to ask a direct question, pertaining to the topic aroung which the minimal membership community is organized. For dogs, it could be something like this: “do you know the cheapest place to buy Royal Canine food for Labradors?” If there are many such questions, core members will post a FAQ (frequently asked questions) with answers.

Reputation arises in contexts where there is at least a minimal community with visible contributions by community members, where the quality or the frequency of these contributions become common knowledge. What distinguishes reputation from an attitude of trust or distrust towards any other person, whether based on prior common history or not, is

the visibility of the member`s contributions to all other members and its conformity to the culture of the minimal membership category.

You may have a reputation without common knowledge as you may not know if you have a reputation and know even less if others know your reputation or whether others know you know your reputation. Rumor is such a stage of reputation: it will never reach the level of common knowledge even if it reaches each and every person in a given population. What the internet does is make such reputations available to all concerned (that is, all who are in a structurally equivalent position concerning this piece of information), and it – by making it public – also creates common knowledge that such reputations are available (at least in principle) to all. This obviously changes the game: the person with the reputation will behave very differently under common knowledge conditions than under pressure from rumor because rumor is much less likely to give rise to common action than common knowledge.

Reputation is a trust-enhancing mechanism. Such mechanisms enhance trust by mitigating the amount of risk or the occurrence of moral hazard problems. Moral hazard is a term in economics, game theory and theoretical sociology describing principal-agent problems that arise due to asymmetrical information resources. Simply put, it poses the same problem in situations where we (the principals) do not fully know the intentions of our agent (someone we trust with something, or with regard to something), nor are we able to fully monitor her actions after we transferred some authority, made ourselves vulnerable, initiated a transaction etc with her. In a sense, we can extend moral hazard problems to include the self: we may not know how we shall feel, act or decide after we have taken a course of action or made a decision that would affect the future.

However, Herbert Gintis (Gintis 2010) made a powerful case that the standard common knowledge literature, which usually deals with isolated games, and assumes infinite rationality as a prior, can lead to contradictory assertions and results that cannot predict actual behavior in experimental settings. He argues that prior knowledge has a much more powerful impact on the outcome of games than pure game theory would predict.

He introduces a clever example in his paper to demonstrate that prior knowledge of expections concerning a member, or membership requirements, are required to solve a “mud on your face” game. He argues you must have a conception of the state of mind of others in the game to gain, gradually, knowledge concerning yourself in a common knowledge situation. If three

decorous ladies receive the information that there is mud on the forehead of some of them, instead of the usual rounds of calculations (requiring complete rationality) they can rely on prior knowledge. Ladies are polite (and expect others to be polite) which means they would never tell if they see mud of another lady` face. They all know this – it is a prior to the game. They also know that ladies blush if they lie. So if the first lady to talk says she really does not know if she was soiled, and does not blush, it indicates to the others that she really does not know. Would she blush, the others could recognize the lie, inferring that they all have mud on their faces. The second lady therefore can safely conclude – seeing one or two mud stains – if she has been soiled. No third round is needed.

Such prior social knowledge about decorous behavior or expectations of others, argues Gintis, is replaced by a rather extreme presupposition of universal rationality, attributed to all members by all members in the game, in most game theoretical analyses. What I add to this is minimal membership – being a lady is a minimal membership category with recognized rules and roles. Instead of relying on universal rationality, it is much safer and more realistic to rely on what Erving Goffman describes as social situations, the framing of social situations and an effort to manage impressions and save face.

When framing is stable in a community, it replaces artificial devices such as Dictator or Ultimatum games, indeed, this is what contributes to the surprising results in experimental settings. My hypothesis for this thesis was that minimal membership in a community is such a frame that defines the rules of the game. And as actions of members are transparent to all other members (at least if they care to look at trails or histories of other members), reputation, and reputation-based trust arises.

Some critics argued that rational choice theory and game theory is not applicable at all to internet interaction because internet interaction is not strategic or because rational choice theory has unrealistic assumptions about the way people behave and undervalues the importance of identity and bonds. For the above case-studies I started with the assumption that game theory is very important in understanding internet interaction and there is nothing wrong with rational choice theory other than its simplistic assumptions concerning rewards or benefits in strategic action. I also argue that superrationality is not required when common knowledge and a common knowledge based community is present. Note that I argue, again, for

a very minimal concept of community. If some rules, frames etc. are common knowledge to certain persons, these persons form a community and are aware of this membership as well as the membership of other structurally similar persons.

This is in perfect agreement with Goffman's theory about social interaction. Goffman real-life examples (or rather, semi-abstract constructions) of how frames are known presupposes that there is a community that is familiar with a set of frames and there is common knowledge that members are familiar with this set of frames. What fits a gentleman, or how to behave in a restaurant as opposed to a pub, are rules that are deeply rooted in the shared culture of a given group (such as WASP persons in an American township) and are historical in the sense that even within the same group they change over time (behavior rules for WASP persons in townships changed considerable from 1950 to the present).

In fact, membership is often defined by whether you share this common knowledge. If mental patients are seen as deprived of the possibility to be aware of the shared norms, they are outside the community, their behavior is irrelevant to how members perceive their group and in general obligations of group membership. However, if a person who, by birth and circumstances, is defined as a member and is accepted to behave accordingly exhibits the same behavior that some mental patiens, the whole community will become shattered and face the dilemma of excluding the member (expulsion is a sign of membership), trying to turn her around or revise their norms. I argue that internet bullies such as Tom Mandel fit this category, while dedicated Wikipedia trolls ride the fence – trying to provoke Wikipedians into accepting their membership (by responding), while Wikipedian administrators try to deal with them as "mental patients", and although they are harder to keep out by institutionalized coercion it is quite common that their contributions are detected and corrected by bots (scripts) written for this very purpose – were they members, it would be extremely rude to deal with them by way of bots, even if they misbehave.

If you cannot establish reputations or do not have inevitable community sanctions, the next best thing to promote trust is creating institutions. In fact, institutions might replace trust, offering pre-emptive guarantees such as legal sanctions (Hardin 2006). However, the legitimacy of legal institutions is based on the (often highly unrealistic) assumption that the

Law and its content is common knowledge (Vandershraaf, 2006). Minimal membership (such as being subject of a national legal code) is rarely enough to prevent freeriding or deviance. As it is demonstrated by several empirical research projects, communities and peer groups have a far stronger impact on individual's behavior than national codes. Framing and a common knowledge of available frames, roles and rules, can be unambiguous in a small group with many interactions (in network theoretical language: in a dense network) but it is at best conflict-ridden and involves competing loyalties in a setting where there are several framing strategies and the national legal codes are only one of them. Again I invoke Simmel's insight concerning the money-based economy (and social roles) and the cultural shift between small town living and large city inhabitants. Framing in large cities is more difficult, less transparent, free-riding is easier, and the groups people form are more ephemeral.

Durkheim – as well as Simmel – were the first to emphasize embeddedness as a precondition of preventing anomy and establishing clear frames for situations. In ephemeral communities – such as a Usenet discussion forum where people might freely join and go – such unambiguous frames are difficult to maintain.

I think this explains both the role of founding fathers (or benevolent dictators) and the fact that core participants act as gate-keepers for newcomers. For an internet community where there are risks, it is vitally important to keep interpretive frames stable. For many if not most services, as I tried to demonstrate above, interpretive frames can be stable if there are some core principles laid down by Founding Fathers that are interpreted by core members and applied to newcomers or new phenomena. History matters even for services with a high turnover rate as long as a loyal core group is present. We have to acknowledge – however strange this sounds – that internet services and communities are deeply conservative (as much as anything or anyone can be conservative in a rapidly changing social and technological environment). I included the case study of Geocities to make this obvious but Geocities is in fact only an example of a more important structure of maintaining potentially unstable frames on the internet.

The need for a loyal core group, in turn, explains the language of community. The loyal core group who are usually seniors need this framing of the service to be able to establish their role as guardians of the invisible constitution and their power to define appropriate frames. It is an

evolutionary process and core members (or core member groups if there are more core membership categories) are just as likely to meet offline as online, and whether their cooperation starts offline or online does not seem to matter much in terms of the outcomes. The Well started with an online core group, Wikipedia started with an offline core group but both crossed the lines between online and offline. It is even more surprising that hackers – by definition a secretive group with structurally equivalent groups and meritocracy – not only organized real-life protests but also organized conventions. Many services are based on the assumption that people want to cross this line – such as Meetup.com that allows people with similar interests to organize real life meetings.

That real-life interaction, and general interaction styles in a language community, matter is proven by the rather different behavior of French, Dutch and American participants in Ebay. In low-trust countries negative feedback has more weight and risk aversion is more common (such as in France), therefore the volume of trade and prices are both lower. In high-trust countries positive feedback is a better indicator whether peers will trust each other therefore high reputations bring higher volume and higher prices. (Robinson, 2006) Unfortunately, there aren't many intercultural comparisons concerning services that are available in several languages – a study of Facebook users' behavior could be an important contribution in this field.

We know from the studies from Wellman, Haythornwhite and others that there is no strict line between online and offline groups. This is supported by the behavior of most bloggers who blog for people who they also know offline, and real name-based services where you publish information for "friends". It follows naturally that instead of privacy per se or privacy awareness we should analyze "strategic privacy" where people choose disclosure not because they are ignorant but because they – for various reasons – want to be seen and identified online with their offline self by using real names and giving many IRL information (school or employer, telephone number, address) on their profile page. This signals their readiness to enter relationships with peers who regard such disclosure as a form of trustworthiness and are ready to reciprocate.

For internet communities that have risks where a core group of loyal members is required to stabilize interpretive frames and interpret and publicize founding principles, offline interaction

and the expression of loyalty as well as establishing a history with peers strengthens community ties and leads to a virtuous circle whereby people can keep the framing of reputation stable in the much more fluid environment of the internet. On the other hand, it is the internet that makes it easy to create and maintain common knowledge by the regular contributions of loyal core members. This becomes another virtuous circle. But it can also lead to neo-tribal conflicts or simple delusions.

I would interpret the early "homesteading" concept of Barlow or the idea of a reputation economy to such delusions. Groups that formed around Barlow, The Well or the early open software movements were attracted by common purpose and homophilia but because of a lack of understanding of the bonds of their community as opposed to the motives of people who entered the internet in general, they surmised that cyberspace creates completely new forms of communities with completely new sets of frames and roles, all similar to what they experienced as pioneers of these communities. However, such delusions were fruitful in the sense that pioneers did establish traditions that served as reference for newcomers. This is why, or so I argue, successful services are characterized by (in internet time) a relatively slow evolution from personal projects to worldwide services and why they developed by continuous tinkering in response to user needs instead of keeping strictly to some original design. (This is what makes me skeptical concerning the applied knowledge of "how to design online communities").

We encountered such delusions – when there is common knowledge of something that is, in fact, not the case – in the "Twitter revolution" following the insurgence in Iran after the rigged elections in June 2010. Contributors to the channels devoted to the ongoing events in Iran came mostly from the U.S. or from other countries not from inside Iran. There were Iranian contributors, however, it was difficult to establish the reliability of their accounts of the events. Participants in these Twitter channels, not being able to identify users from Iran, and overgeneralizing sentiments expressed by "trusted sources" came to believe that a revolution is in process, similar to the one that ended the shah's regime. As it turned out after the first enthusiasm withered away, dissenting protesters did not represent the majority opinion of their compatriots and their organizational skills were no match against the Revolutionary Guard. Completely new uses of relatively new services make framing unstable and roles and rules undefinable, especially without recourse to the core group who represent the established traditions of the service or principles of Founding Fathers. This is why in the end Twitter users received criticism from expatriate Iranians and looked for advice from people outside their

communication channel – to hacker-types and people who had, or stated they had, superior knowledge concerning strategies such as DOS attacks, IP-s, RT-s and source verification.

Collective effervescence is a mixed blessing but it is not confined to internet communities – on the contrary, such community defining events are more likely to happen offline, and their characteristics, collective delusions as to the real state of the world, common knowledge of facts that are not verified and distrust of traitors are just as relevant offline. The perception of the 1956 revolution in Hungary is – or so I would argue – a good example of this, complete with iconic pictures publicized by the Western media.

The arguments in this paper reflect my hypothesis that trust and reputation problems are not specific to the internet – or any of the above mentioned services and forms of internet content. On the contrary, trust and reputation problems – or rather, the problems to which trust and reputation are the solutions are universally known to human kind. Trading on Ebay and trading on the silk road involves similar risks. It is the solutions that differ. Although internet-based solutions often mimic hundred-year-old traditions, they do it so effectively and on such a broad scale that their social impact is not only visible – indeed, hard to miss – but transforms cultures and the sense of community boundaries within or across which risk and trust used to be issues of a different scale.

I tried to show that risk-handling on the internet often takes on the form of community building and community structures. By community here I mean a group of people who acknowledge their ties, who have a sense of community and its boundaries but do not have legal institutions or sanctions. Although I do not wish to go into the details of the debates in contemporary political philosophy – between communitarians and libertarians – I do find that the libertarian concept that all you need for maintaining social cooperation is enforceable contracts is manque if we consider the empirical evidence from internet interactions. What is important as common knowledge for internet service users is not the terms of service – which is a legally binding contract --, nor complete information concerning the others' intentions but the common frame of reference. Legally binding contracts are often re-negotiated (this is the voice option according to Hirschman) even if users accepted them when entering the service, after they realized the consequences of these terms for their activites (such as that all content they publish is owned by the service operators). Others' intentions are not very interesting as

long as there is common knowledge concerning norms – it is supposed that community norms will be enforced by community sanctions, even if no institutional coercion is present. On the other hand, users tend to resent when operators or owners directly interfere and impose sanctions, even if they can invoke certain articles of the Terms of Service. Unless the owner or operator is himself part of the community – as founding fathers are – they are perceived as outsiders who have no right to impose rules. This might be an illusion again, yet the exit option is always present and organizing collective action is far easier on the internet. This explains why successful services have minimal principles and tend to have a founding father who abstains from interfering as long as core members can handle a situation. This is not at all how we see a legal system supported by the monopoly of coercion or violence of the state.

This would predict that changes in the terms of service will have much less impact on user behavior than changes in the perception of founding fathers. I tried to present the case of Zuckerberg and Facebook as a gradual acceptance of the fact that without voice, loyalty will diminish and a mass exit might take place.

Some ecologists and anthropologists argue, invoking the famous Dunbar number, that internet communities are an illusion, and so are "friending", and might even have a detrimental effect on offline social networks. Robin Dunbar, the British antropologist argued that the number of connections an individual of a species might have is tied to the size of the neocortex. Dunbar in a 1992 article speculated that based on the size of the human brain, the utmost limit of a more or less cohesive group is about 150 members. He also thought that language might have had an "extension" effect – indeed, it might have arisen because of a need for an extension tool – for groups to grow and still maintain some cohesion or ability to act in unison. (Dunbar, Robin (1998). *Grooming, Gossip, and the Evolution of Language*. Harvard University Press ; http://www.hup.harvard.edu/catalog/DUNGRO.html.) It is interesting to note that first mobile phones or sim cards could store no more than 150 or 200 names with phone numbers – I do not have evidence that strategic designers of mobile phone corporations consulted the literature on Dunbar's number; they might have simply come up with a reasonably number within the given constraints of technology. Yet the coincidence is striking.

As opposed to how Dunbar characterizes a community – a group where mutual grooming is present and a pecking order is formed based on (some kind of) meritocracy – I argued for a minimal definition of community to start with – structural peer equivalence. I tried to demonstrate through case studies that this precondition is enough for online communities to emerge, although it is not enough for communities to solve internal problems and build stable

reputations. Frames, the principles governing rules and reputations develop in an evolutionary manner starting with a small community and one (or several) founding fathers (or mothers). For conflicts that cannot be solved within existing frames as they were interpreted and communicated over time to new members by core members, recourse to the benevolent dictator (or some body that is anointed by him) is essential.

Wagner úr, one of the small core group members present when Index forums started, was selected as an official liason by Index staff for communicating with forum contributors (or registered members) who are wisely regarded by Index staff as a community following its own rules where Index better not interfere. Wagner úr was selected as a liason after volunteer moderators (also recruited by Index from among core forum participants) had too many fights among themselves, up to the point where they regularly reversed each other` actions. A forking attempt followed, moderators leaving Index as a group, protesting against the behavior of other moderators. There were attempts to create a Modus Moderandi that all moderators are expected to respect. Yet, as Wagner úr explained to me in fact written rules to indicate what conduct is acceptable (the Modus Moderandi for Index forums) are much less important in the actual mechanisms of keeping forum participants in place. What is important is constant negotiations concerning these rules within the moderator community and a final recourse to Wagner úr himself in cases of high importance. While moderators are also group members and they are selected by the dictator (Wagner úr) who interferes in no other ways unless there is an emergency or a completely new situation, the system works, regardless written rules. Common knowledge of frames and rules are transmitted (and interpreted) by moderators who may and may not invoke Modus Operandi when making their decisions.

Written laws in real life characterize communities that are too large to manage without them and institutions enforcing them. But for the hundreds of thousands (occasionally millions) of users of a given service a written code indicates a take it or leave ultimatum, whereas community sanctions leave room for negotiations. In my argument, it is enough for such users to be in a structurally equivalent position (the minimal requirement of being users of a given service) to have membership feelings, regardless whether they actually interact or not. If communities are not able to negotiate, they will soon choose the exit option. The exit option may seem as an individual strategy. However, mass exit becomes highly visible and after a while common knowledge which entails some peer pressure as well. It can be a matter of honor

whether one leaves or stays. This is why service operators are and should be afraid of mass exit.

Such negotiation options for peer communities, on the other hand, create opportunities to cooperate offline. Critical mass – an international movement of people who prefer bicycles to mass transportation or cars in cities – by its very name indicates its goal. As soon as the cyclist peer group is large enough to have some impact – when it reaches critical mass – the movement reaches its goals. Therefore the main objective of their online presence is to keep community ties alive and organize mass demonstrations on a given day in several countries. Critical mass would not be possible without the internet. However, given the strong commitment of cyclists – a subcultural group – it is unlikely that they ever define their campaign as finished and successful. Even though many steps were taken by authorities to make it easier for cyclists to ride within the city, Critical Mass became a community by and for itself, and annual gatherings are seen as a renewal of loyalty to the group rather than mass protests.

Other examples abound – in Hungary just recently a Facebook group was founded where members stated they would sacrifice the usual fireworks on August 20th, a national holiday, and spend that money on people in Hungary who suffered from flooding rivers. The group reached 200000 members in a fairly short time (about three weeks), which of course was not simply a grass-root network phenomenon as mainstream media discovered the group and publicized it by giving it "news" status. It did have an impact on the government's decision as to how to organize the fireworks. Another such grass-root group was "we bet more people will prefer ("like") this nice red apple than Viktor Orbán". However, soon some people started complaining that naming Viktor Orbán but not the other contestants in the elections was unfair and biased. Immediately the group owner and administrator changed to name to "We bet more people will like this nice red apple than all of the candidates taken together". They set up a counter to compare the "likes" for each candidate and indicated the difference of "like" counts between the aggregated count of all candidates and the red apple group. The red apple won. This, of course, had no impact on the outcome of the elections.

Even more recently, on the day the new media law was passed by the Hungarian legislature, one unnamed individual started a page called "one million for freedom of the press in Hungary". It was before Christmas 2010 and the administrator disappeared, however, people kept joining up ("liking" the page) until it reached 50k members – a membership count where admin rights are withdrawn by Facebook as a rule. The Founding Father not only disappeared

but upon return, he had to face the fact that he lost his administrative privilages that consisted, among other things, of posting different kinds of leading posts, documents and links. Whatever happened on the page stayed on the page as only admin-posted messages reach all members. All coordination options were lost. It took a long process, going around official Facebook channels and appealing to the PR section of Facebook, to get these admin rights back.

In 2011 revolts broke out in the Arabic world, starting with Egypt and Tunisia. By then, the role of Facebook in coordinating activities became so well known that Facebook was prepared to grant special pages to causes it felt it should support. Media coverage also enhanced the pressure on Facebook which gave up its neutral service provider image and took on the image of supporting a popular cause – inching closer to those early services that were organized around such common causes or interests.

Thereby the fact that Facebook offers a framework for communities as I characterized them became well known – and recreated the old structure of leader-core members-members who have coordination problems as well as a common knowledge of this structure among those interested. It is obvious why such a structure is more useful for coordination than Twitter.

It is too early to analyse the role of the internet and Facebook in particular in coordinating movements on the ground; I simply wanted to note that even within a new service that is regarded with deep distrust or even contempt by pioneers the old pioneer ethos is revived as this is the ethos that fits internet communication, creates trust and facilitates coordination.

All these online movements or groups are characterized by single leadership and mass participation with volunteers to help coordinate participation. They are peer groups and perceived as such. As soon as the initiator of the plebiscite movement tried to form a new party, her followers left her as she left the common frame of the game. As opposed to Critical Mass where structural equivalence of peers (urban cyclists) provides a frame and is maintained by volunteer leaders in several countries, a transformation of a citizen initiative into a party may be interpreted that the leader suddenly abandons the common knowledge frame. This leads to the dissolution of the peer community as it happened in Hungary with a movement to curtail MP' discretionary budgets where the founding Mother decided to form a party. The same shift of structure threatened the integrity of Wikileaks, although its fate is not yet resolved.

What is the role of game theory in the above analysis of online interactions and trust-enhancing mechanisms? Online communities – like offline ones – face risks in interactions among members (such as deception, misinformation, harassing) and in the behavior of individuals for the community (such a free riding and vandalism) with the additional disadvantage that the costs of leaving a community (and joining under another name), that is, the costs of defection are very low. As I noted above, pure game theory based on the assumption of utility maximizing of perfectly rational individuals would predict that no such communities will ever arise. As they exist, we must revise some of these assumptions but this does not mean we have to abandon game theoretical considerations. On the contrary. I argued that conventions (as Gintis uses the concept) arise on the internet because 1. there is a common knowledge of peer equivalence which creates a minimal membership, 2. because minimal membership implies potential common interests (although there might be other forms of interests at play) 3. because collective goods are seen as desirable for this minimally defined community, 4. reputation mechanisms create incentives to contribute and deter vandalism, while 5. free riding is not costly for peer equivalent members (in a sense they are all free riders in regard to one or another collective good produced by the community), furthermore 6. incentives, reputation mechanisms and in general interpretive frames for peers have common knowledge characteristics (even if there is no ideal perfect case of common knowledge) as opposed to other forms of peer equivalence and 7. therefore have much more powerful effects in terms of strategic behavior, in addition to which 8. internet communities are evolutionary forms with charismatic leadership that does not lead to a transition from peer equivalence to institutionalized hierarchies (where free riding or slacking can be serious problems).

If a game in a minimal community can be defined in terms of what members assume other members expect from them, and membership is common knowledge, no explicit or written code is needed, not to mention organized enforcement of norms. Such communities are multiperson PD tournaments where participants can have their own incentives and satisfaction and yet the collective good arises as long as the framing of group activity includes contribution to the collective good. What I mean is a person may want to get a good reputation in the technical community, may want to learn from more experienced users important (marketable) skills or may want to buy nice beanie babies for cheap, yet they know they are expected by other peers to contribute to the collective good and non-contribution may lead to exclusion (in

whatever manner). Therefore, they contribute. This is consistent with the encapsulated self-interest theory but instead of repeated games we need generalized reciprocity. However, there is no need for deep embeddedness for all peer equivalent members and rich rather than minimal membership does not help maintaining stable frames.

Instead, generalized reciprocity is maintained by core users who act as seniors, and, as if were, become anointed by a charismatic leader/founding father to maintain order which mostly means maintaining the relevant set of frames and passing it on to others as well as turning it, as much as possible, into common knowledge. Such common knowledge than becomes instrumental in coordinating the behavior of many users beyond the core group.

My emphasis throughout this paper was on peerness and its role in mitigating risks. Perhaps it seems I believe all internet users are similar somehow, and it is this similarity that is important rather than real life differences. However, structural equivalence does *not* imply similarity in any other respect. Structural equivalence simply means peers are nodes in a network who are in an identical relation to another node without being necessarily connected. The node (or occasionally a dense group of nodes) they all connect to in a similar way creates minimal membership because this structural equivalence is *known* to all nodes and becomes *common knowledge* among them as they interact. This is why generalized trust is created by a common knowledge of generalized reciprocity rather than encapsulated self-interest (that mostly describes two-person games).

There are link structures on the internet, of course, where structural equivalence is less important than multifunctional and mutual links – such as between a dense network of bloggers or MSN users. In this case there is no central node which also means there is no way to establish common knowledge of reputation mechanisms and reputations (which of course might be informal in small communities, for example granted by a senior in casual remarks). Such networks have a different set of techniques to maintain trust – mostly embeddedness . A transgressor will be simply ignored first by the person who was hurt and gradually, as the knowledge spreads, by others who take the side of the person who claims to be the victim.

These formations are necessarily small (they follow the Dunbar-rule). If they start to grow, the dense central network becomes a central node in a structure where new incoming nodes will have a structurally equivalent place (this happened when certain blogs became very famous or very influential). Growth – on the internet – always implies that there is structural equivalence, and this is known to peers. My argument in this paper was to show that in most settings where risk arises and successfully handled common knowledge created and maintained by a core group and spread to incoming equivalent peers proved to be the most effective way to deal with risks.

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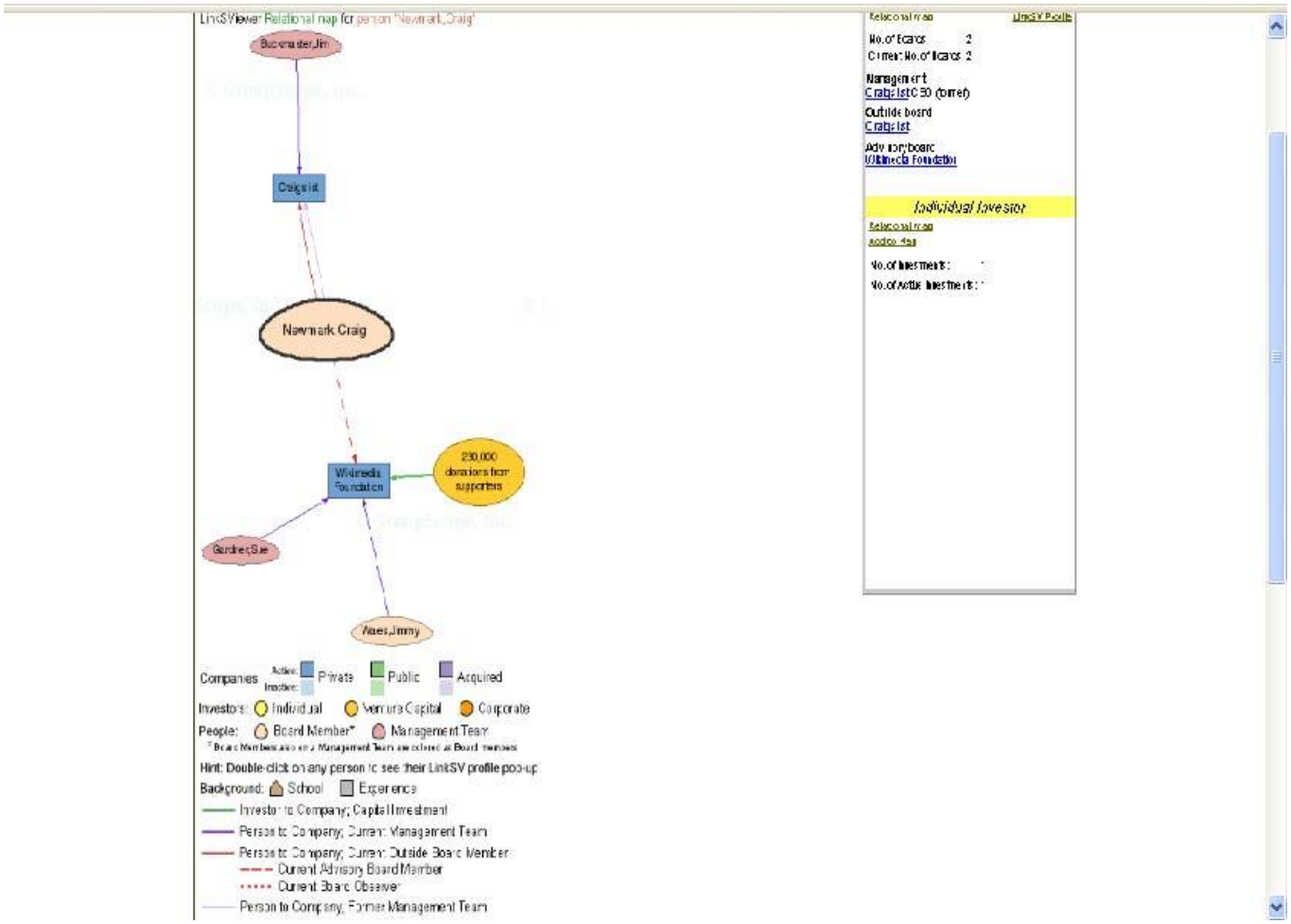
LinkSViewer Relational map for person "Newmark,Craig"
Buchanan,Jim
Craigslist
Newmark,Craig
Wikimedia Foundation
250,000 donations from supporters
Gardner,Sue
Wales,Jimmy
Companies
Active:
Inactive:
Private
Public
Acquired
Investors:
Individual
Venture Capital
Corporate
People:
Board Member*
Management Team
Hint: Double-click on any person to see their LinkSV profile pop-up
Background:
School
Experience
Investor to Company; Capital Investment
Person to Company; Current: Management Team
Person to Company; Current: Outside Board Member
Current Advisory Board Member
Current Board Observer
Person to Company; Former Management Team
Relational map
LinkSV Profile
No.of Boards 2
Current No.of Boards 2
Management
Craigslist CEO (current)
Outside board
Craigslist
Advisory board
Wikimedia Foundation
Individual Investor
Relational map
Add to Map
No.of Investments:
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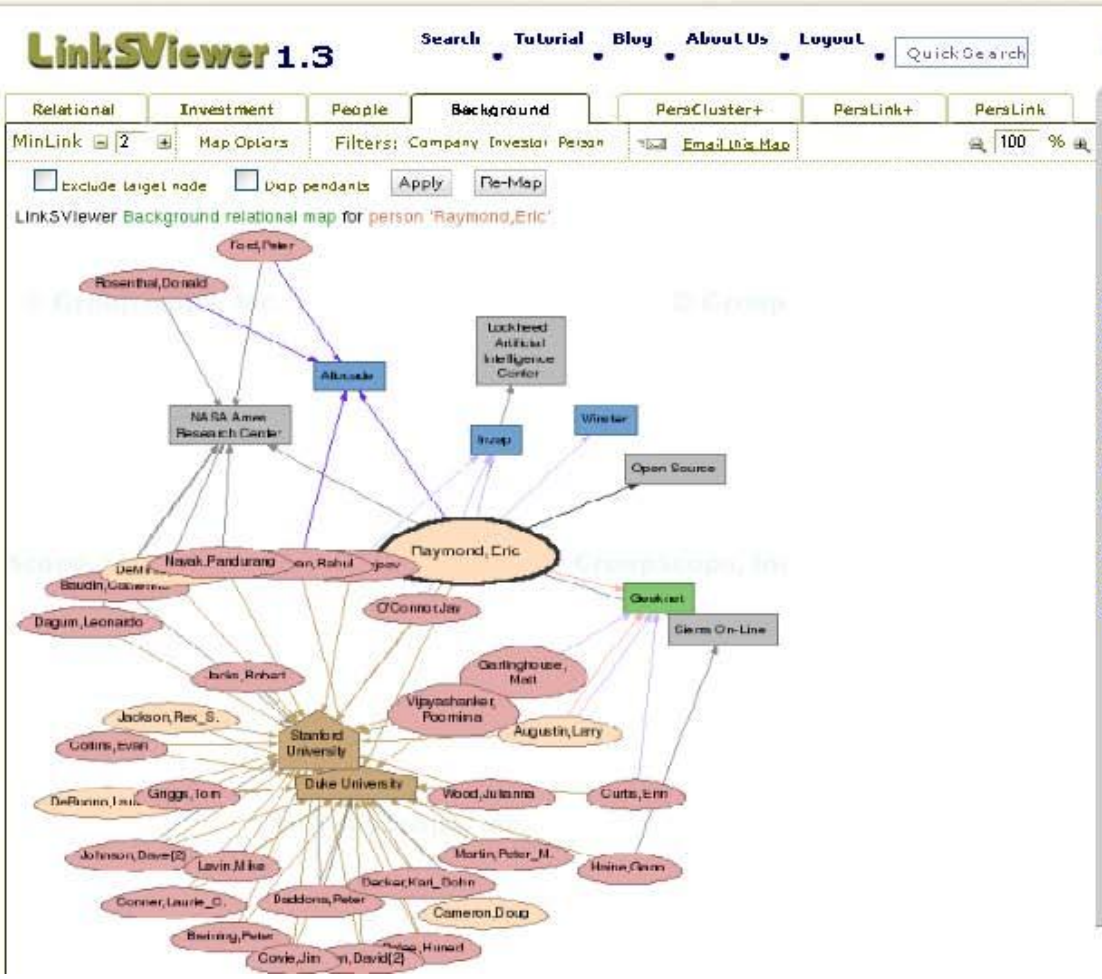
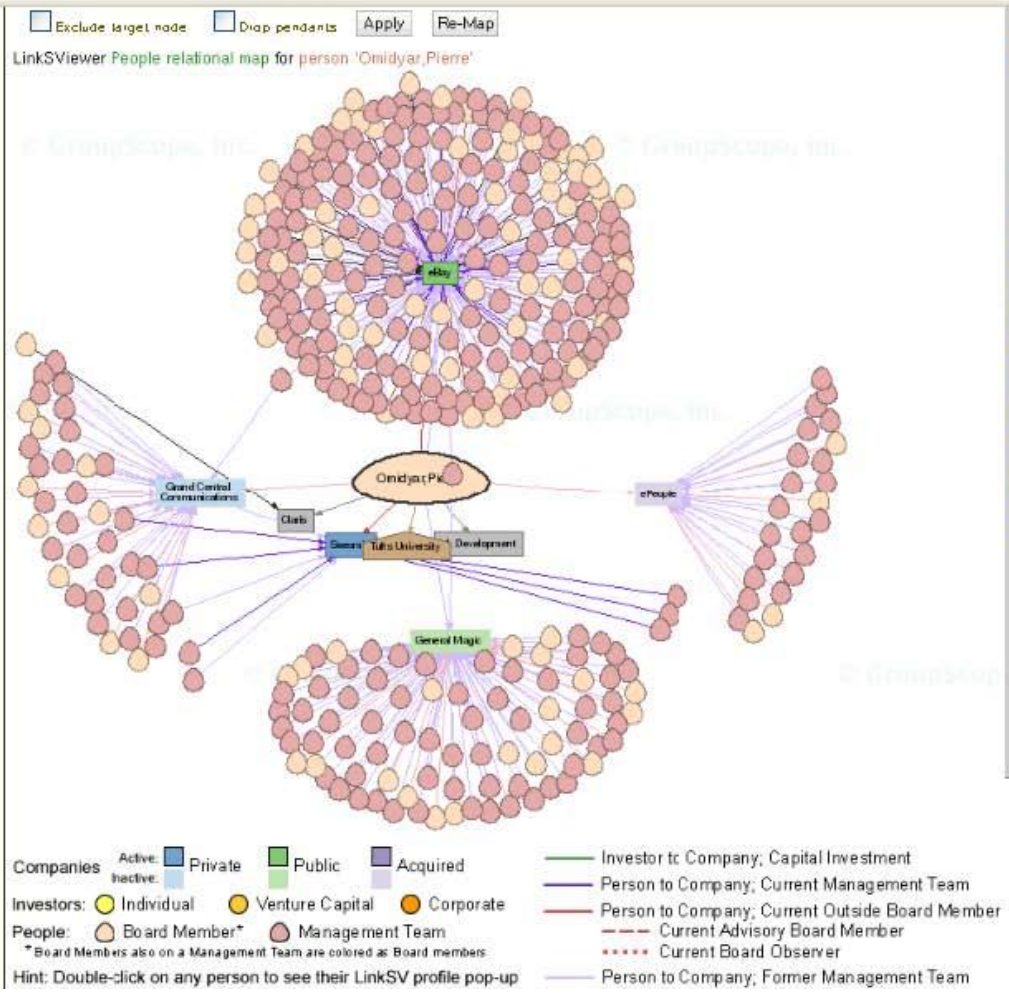

LinkSViewer 1.3
Search
Tutorial
Blog
About Us
Logout
Quick Search
GROUPSCOPE
Visual Network Analy
Relational
Investment
People
Background
PersCluster+
PersLink+
PersLink
Information
Controls
MinLink
2
Map Options
Filters: Company Investor Person
Email this Map
100
%
Exclude target node
Drop pendants
Apply
Re-Map
LinkSViewer Background relational map for person 'Raymond,Eric'
Raymond,Eric
Person
Relational map
No. of Boards: 1
Management
Allocade VP Engineering (current)
Inzap VP Engineering (former)
Winster CTO & VP Engineering (for
Outside board
Geeknet (former)
Affiliation
Open Source
Experience
Lockheed Artificial Intelligence
Research Scientist
NASA Ames Research Center
Engineer
Sierra On Line Director of Develo
Education
Duke University Primary Deg.
Stanford University MS/MA
Ford,Peter
Rosenthal,Donald
Allocade
Lockheed Artificial Intelligence Center
NASA Ames Research Center
Inzap
Winster
Open Source
Raymond,Eric
Geeknet
O'Connor,Jay
Dagum,Leonardo
Sierra On-Line
Jackson,Rex_S.
Stanford University
Duke University
Augustin,Larry
Curtis,Erin
Wood,Julianna
Martin,Peter_M.
Levin,Mike
Barker,Karl_John
Cameron,Doug



Person

Relational map LinkSV Pic

No. of Boards: 4

Current No. of Boards: 2

Management

General Magic developer relations (former)

eBay Chairman (former)

Outside board

Seesmic

eBay

Grand Central Communications (form

ePeople (former)

Experience

Claris Software Developer

Ink Development co-Founder

Education

Tufts University Primary Deg.

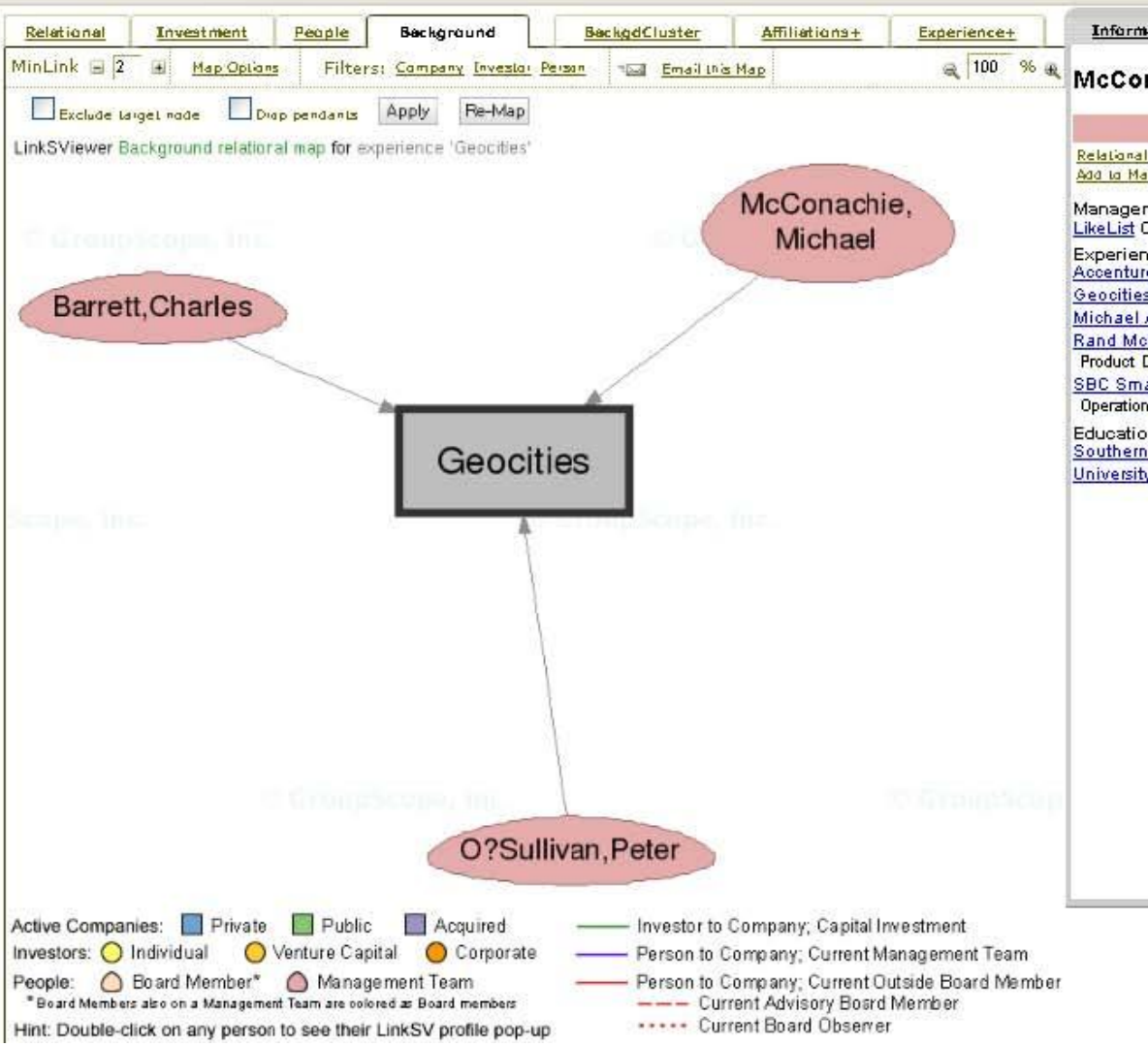
Individual Investor

Relational map

Add to Map

No. of Investments: 6

No. of Active Investments: 3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2
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Email this Map
100
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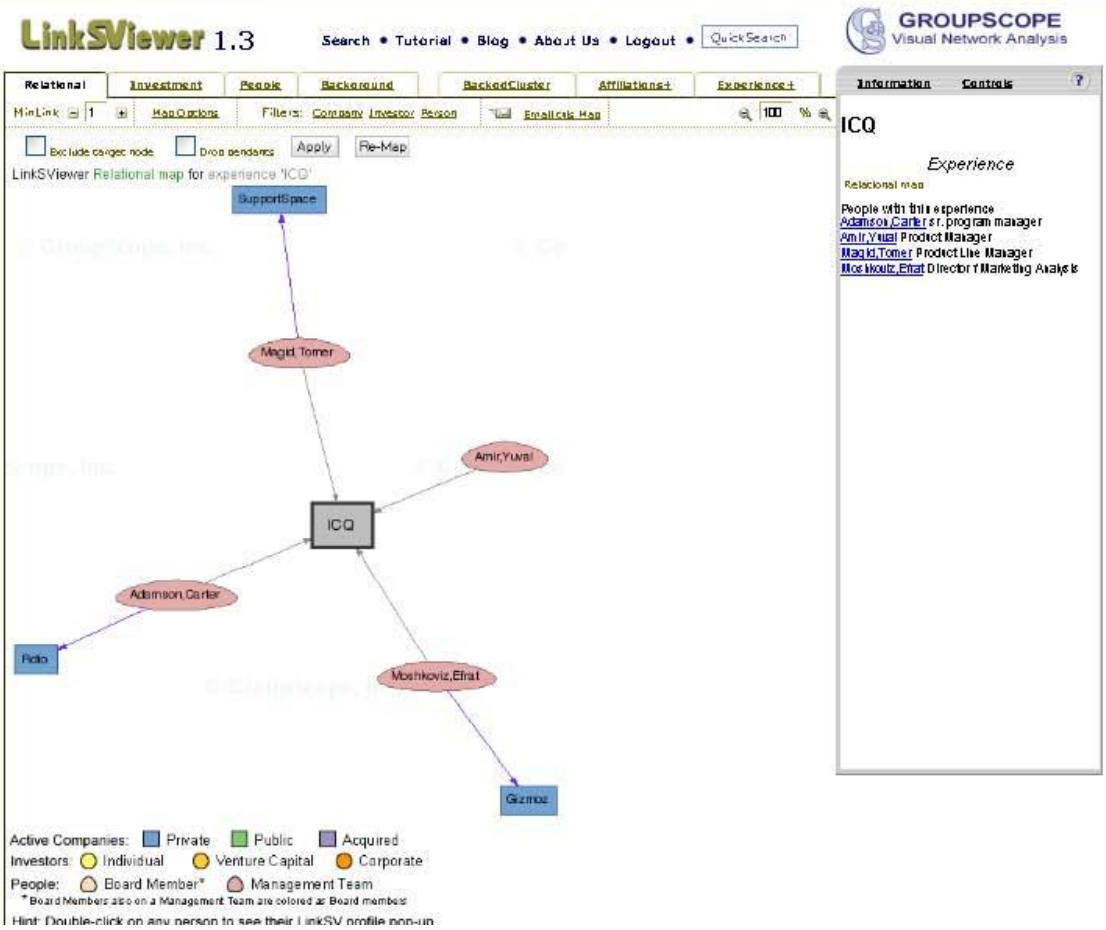
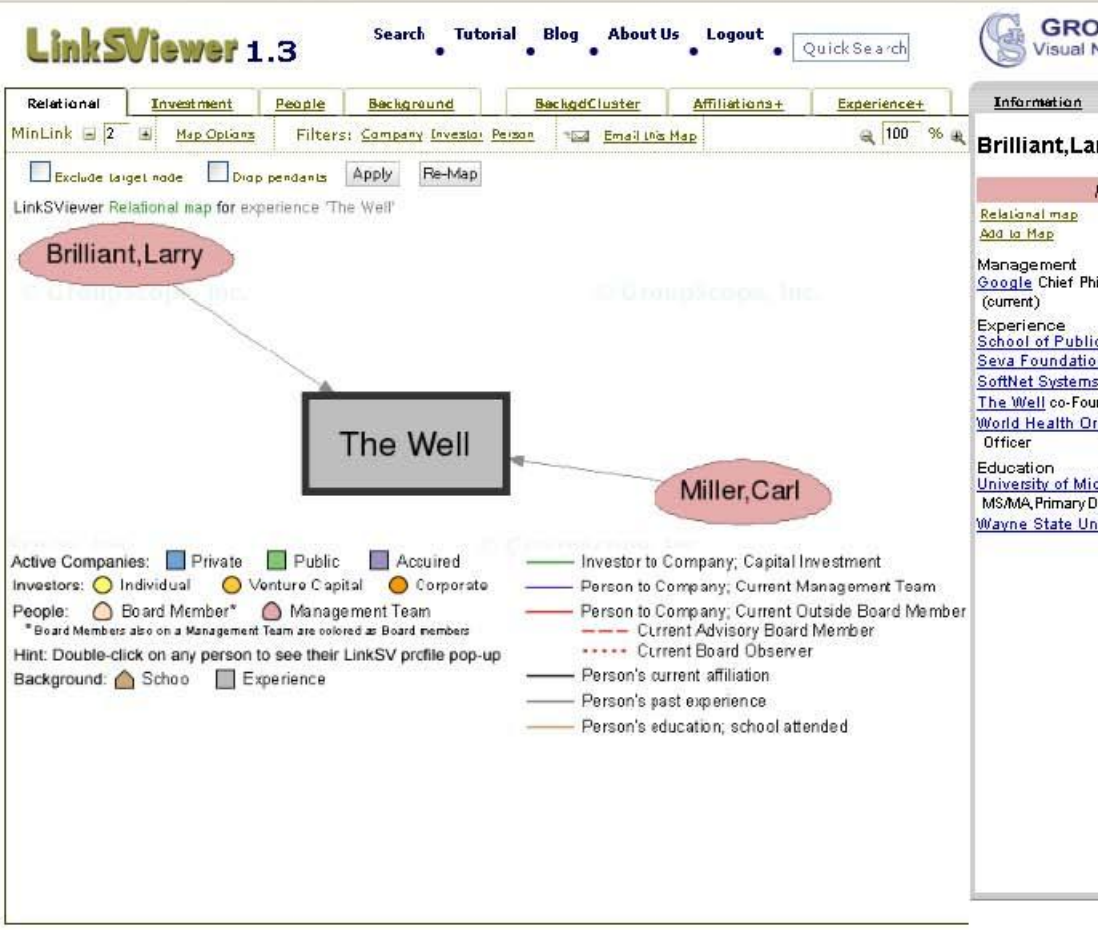
Exclude target node
Drop pendants
Apply
Re-Map
LinkSViewer Background relational map for experience 'Geocities'
McConachie, Michael
Barrett,Charles
Geocities
O?Sullivan,Peter
Active Companies: Private Public Acquired
Investors: Individual Venture Capital Corporate
People: Board Member* Management Team
* Board Members also on a Management Team are colored as Board members
Hint: Double-click on any person to see their LinkSV profile pop-up
Investor to Company; Capital Investment
Person to Company; Current Management Team
Person to Company; Current Outside Board Member
Current Advisory Board Member
Current Board Observer


LinkSViewer 1.3
Search • Tutorial • Blog • About Us • Logout •
Quick Search
GROUPSCOPE
Visual Network Analysis
Relational
Investment
People
Background
BackedCluster
Affiliations+
Experience+
Information
Controls
ICQ
Experience
Relational map
People with this experience
Adamson,Carter sr. program manager
Amir,Yuval Product Manager
Magid,Tomer Product Line Manager
Moshkoviz,Efrat Director f Marketing Analysis
Exclude center node
Drop pendants
Apply
Re-Map
LinkSViewer Relational map for experience 'ICQ'
SupportSpace
Magid,Tomer
Amir,Yuval
ICQ
Adamson,Carter
Moshkoviz,Efrat
Gizmoz
Active Companies: Private Public Acquired
Investors: Individual Venture Capital Corporate
People: Board Member* Management Team
*Board Members also on a Management Team are colored as Board members


LinkSViewer 1.3
Search
Tutorial
Blog
About Us
Logout
Quick Search
Relational
Investment
People
Background
BackgdCluster
Affiliations+
Experience+
Information
MinLink
2
Map Options
Filters: Company Investor Person
Email this Map
100
%
Exclude target node
Drop pendants
Apply
Re-Map
LinkSViewer Relational map for experience 'The Well'
Brilliant,Larry
The Well
Miller,Carl
Active Companies: Private Public Acquired
Investors: Individual Venture Capital Corporate
People: Board Member* Management Team
*Board Members also on a Management Team are colored as Board members
Hint: Double-click on any person to see their LinkSV profile pop-up
Background: Schoo Experience
Investor to Company; Capital Investment
Person to Company; Current Management Team
Person to Company; Current Outside Board Member
Current Advisory Board Member
Current Board Observer
Person's current affiliation
Person's past experience
Person's education; school attended
Brilliant,La
Relational map
Add to Map
Management
Google Chief Phi
(current)
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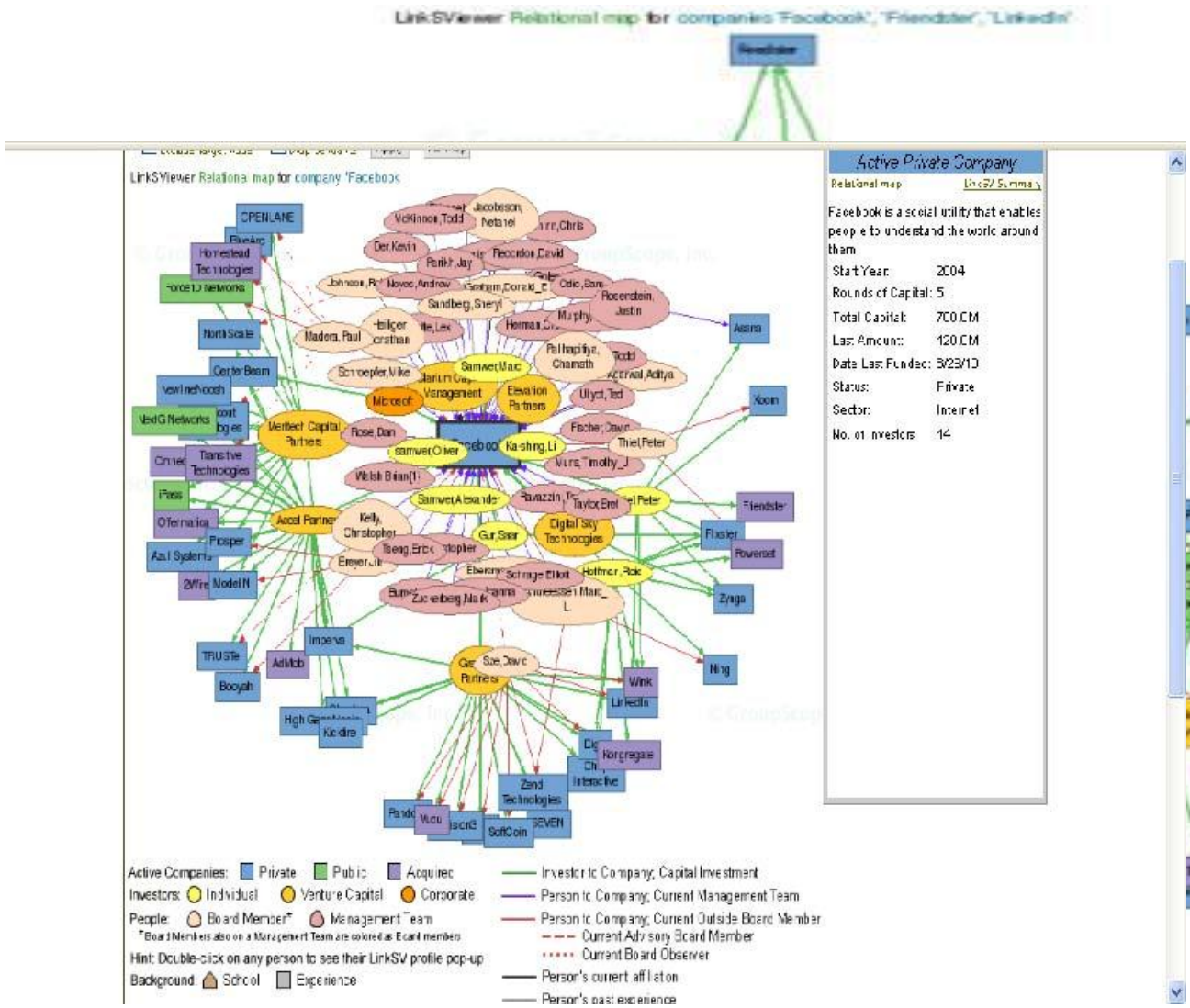
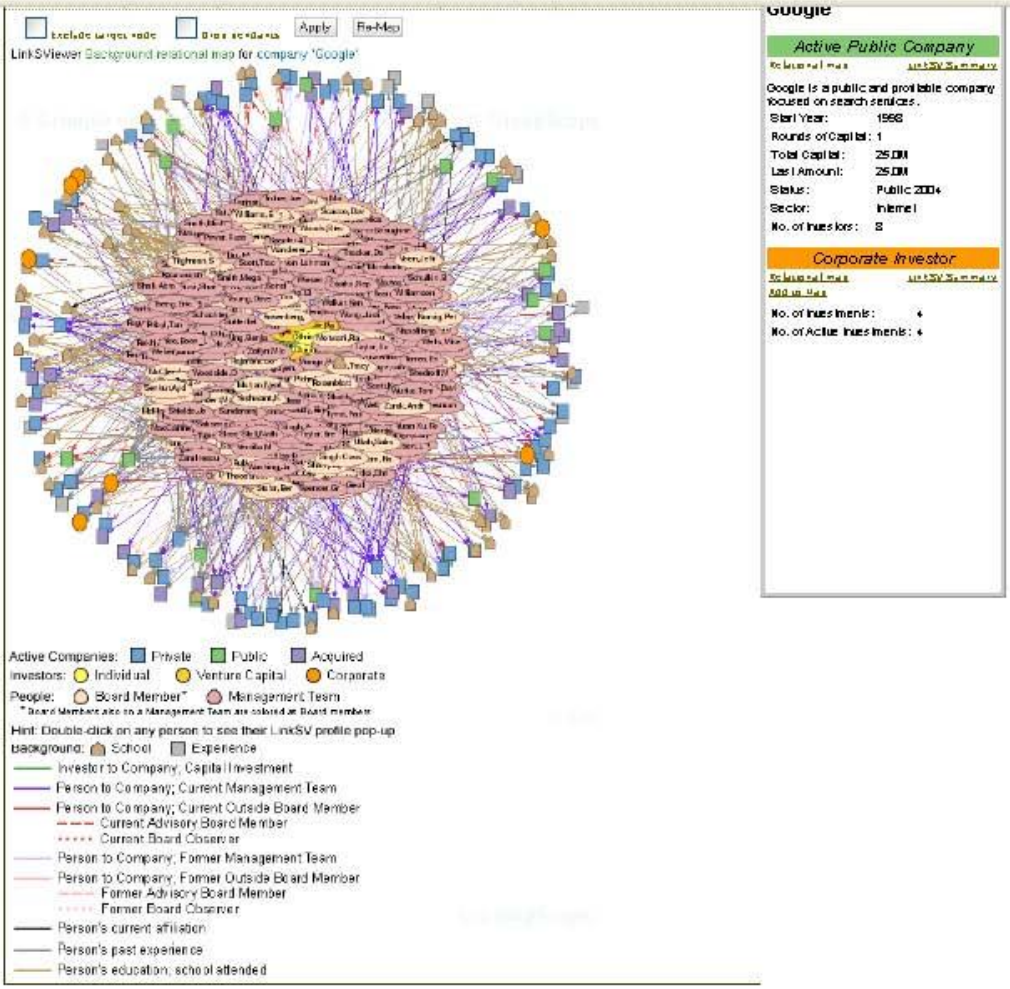

LinkSViewer Relational map for companies 'Facebook', 'Friendster', 'LinkedIn'
LinkSViewer Relational map for company 'Facebook'
Active Private Company
Relational map
LinkSV Summary
Facebook is a social utility that enables people to understand the world around them
Start Year: 2004
Rounds of Capital: 5
Total Capital: 700.0M
Last Amount: 120.0M
Date Last Funded: 9/23/10
Status: Private
Sector: Internet
No. of Investors: 14
Active Companies: Private Public Acquired
Investors: Individual Venture Capital Corporate
People: Board Member* Management Team
*Board Members also on a Management Team are colored as Board members
Hint: Double-click on any person to see their LinkSV profile pop-up
Background: School Experience
Investor to Company; Capital Investment
Person to Company; Current Management Team
Person to Company; Current Outside Board Member
Current Advisory Board Member
Current Board Observer
Person's current affiliation
Person's past experience


Apply
Re-Map
LinkSViewer Background relational map for company 'Google'
Google
Active Public Company
Google is a public and profitable company focused on search services.
Start Year: 1998
Rounds of Capital: 1
Total Capital: 25.0M
Last Amount: 25.0M
Status: Public 2004
Sector: Internet
No. of Investors: 8
Corporate Investor
No. of Investments: 4
No. of Active Investments: 4
Active Companies: Private Public Acquired
Investors: Individual Venture Capital Corporate
People: Board Member* Management Team
Hint: Double-click on any person to see their LinkSV profile pop-up
background: School Experience
Investor to Company; Capital Investment
Person to Company; Current Management Team
Person to Company; Current Outside Board Member
Current Advisory Board Member
Current Board Observer
Person to Company; Former Management Team
Person to Company; Former Outside Board Member
Former Advisory Board Member
Former Board Observer
Person's current affiliation
Person's past experience
Person's education; school attended