Resilience Towards Leaking or Why Julian Assange Might Be Wrong After All (V1.0)

by Kay Hamacher

***Abstract*—In his now (in)famous pamphlet "Conspiracy as Governance" JULIAN ASSANGE (JA) argues about the need for leaking as an efficient way to destroy "unjust" groups as the neo-feudalistic ones - luring the conspiracy theory leaning hacker community into his belief system. Eventually, JA used a biologistic argument on the benefits and drawbacks that uncontrolled leaking might pose for "just" and "unjust" systems, arriving at the conclusion that "unjust" systems are hurt more and thus will be less viable, essentially being destroyed by more "just" systems. While an innovative proposal, the underlying assumptions on complexity, network theory, and especially the evolutionary perspectives were never critically assessed. Some blogs and media raised questions on details and potential threats to innocent bystanders. Still, fundamental problems with the philosophy were never addressed.**

This paper argues against the general validity of such theories. In particular, we will refute some of the biologistic arguments. Theoretical biology has long ago pointed out the hidden complexity in evolutionary processes and as such the envisioned "leaking revolution" might be a limited artifact: there might even arise situations where the leaking envisioned and encouraged by Wikileaks and the like can actually strengthen some "conspiracies".

In this paper I will describe some research questions, that should be answered before given the "leaking philosophy" an unconditioned "thumbs-up". Empirically, for example, a potential strengthening is illustrated by the rise of a 'neo-feudalistic economy', which is linked closely to the paradigm of "intellectual property" as it is to the security-financial-political complex. The players have effectively created a closed network or a "conspiracy" and might be resilient towards Wikileaks-like attacks. The paper concludes with an alternative to that proposal; in particular, a way to deal with the 'conspiracy' that might be coined the rise of the neo-feudalistic society (which in itself is a self-sustainable, self-amplifying feedback loop, not necessarily a conscious conspiracy).

I. INTRODUCTION

LEAKING the information of organizations, governments, and other legal and illegal entities has made the headlines for the best of the last years. This was mainly due to the WikiLeaks-plattform, which pioneered the Internet-based leaking philosophy. In the first phase of its existence, Wikileaks seemed to be merely meant as a tool to accomplish structural changes in society, best described by the founder, JULIAN ASSANGE (JA), himself in several documents posted to the Internets [1]. JA's texts were attributed to be an anarchist manifesto 2.0 [2]. Indeed, JA refers consistently to assassinations of the earlier anarchists. While those targeted the 'unjust' players individually and directly, JA proposed to attack and dismantle the reliability and confidentiality of conspirators' communications structures, on which they rely to conspire against the public. He argues that the communication, upon which all 'conspiracies' rely, can be mapped to a graph, in which nodes represent 'conspirators' and (weighted) links represent communication relationships (including the value or amount of this communication as weights). In this picture, leaking is an effective attack against the links, rather than the nodes. Eventually, this leads in JA's pamphlets to a break-down of efficiency and trust within the 'conspiracy' and thus limits severely or eliminates completely its impact on society.

The validity and reliability of the mechanism(s) alleged in JA's proposal can be assessed by research, both on theoretical-conceptual, as well as on empirical grounds. This manuscript attempts to describe a research program in this direction. I will describe open questions, that need to be addressed, and effects, that need to be evaluated, before it will be clear whether the claimed benefits to society can come into existence or not. To illustrate some aspects and problems with a too simplistic approach, I discuss the rise of the 'intellectual property monopoly-economy' within this framework.

II. GENERAL SETTING AND ITS IMPLICATIONS ON FUTURE ANALYSIS

In the following, I will only discuss 'conspiracies' within democracies and under the rule of law. This is for one reason and has one important consequences for the subsequent discussion:

- The reason is: we do not need to discuss ongoings in the various realization of a 'full' tyranny (be it a military dictatorship, an aristocracy, a theocracy, a cleptocracy, or some other inefficient, feudal organization of society), in which the 'unjust' foundation of the system is obvious and visible in plain sight[1].
- The consequence is: we only have to discuss 'conspiracies' of a (few) people within a larger society. When

[1]Even in the most repressive regimes, (few) people typically notice the unavoidable contradictions between reports in media & propaganda and the daily reality. It seems, that the distress about this is first expressed in cynical remarks and jokes and becomes more and more widespread over time, thus forming a consensus within the populace on the problem of the current form of government. As feedback on shortcomings is non-existent in such tyrannies, non-reaction to and repression of this insight is almost guaranteed, while the popular wisdom spreads (jokes have a higher 'fitness' as a meme than the propaganda). The only 'feedback' possible in such a situation is to overthrow the tyrannies by (violent) force or the gradual acceptance of the leadership to reform the society towards democratic structures and the rule of law.

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a majority would participate in the 'conspiracy' and we follow the above assertion that we only need to speak about democracies, then obviously the majority is not a conspiracy any more, but rather the established will of the populace. In particular, if one can gain something while providing to a major fraction of society a rationale to follow this route, one can gain in a society much more by openly pushing this agenda than by striving for it hidden from public scrutiny. Therefore, in the following 'conspiracies' will refer to (small) groups of people, who have every reason to hide their activities from public scrutiny, as their egoistic goals and means are not aligned to the society or as their methods involve deceiving the public about the true state of affairs. This setting (a small number of 'conspirators' within a larger environment) is the optimization problem in a democracy and provides for a bad signal-to-noise ratio when it comes to the identification of 'conspiracies'.

III. Shortcomings of the Simplistic, Biologistic Approach

> **biologism** - The use or emphasis of biological principles or methods in explaining human, especially social, behavior. http://en.wiktionary.org/wiki/biologism

In the text *"Non Linear Effects of Leaks on Unjust Systems of Governance"* [1] JA argues that the more a 'conspiracy' is 'unjust', the more it needs to rely on secrecy and the higher the dependency on secret and reliable communication. Now, if leaking reveals details on the group's internal thinking and actions, the 'just' systems might suffer, too. However, the costs and induced distrust in 'unjust' systems is higher. Therefore, JA argues, effectively leaking induces a 'communcation tax' which affects more than linear the 'unjust' groups, which – over time – eventually perish due to the lack of competitiveness (or fitness).

This is a pure biologistic argument about the longevity of entities (such as a 'conspiracy'): whenever one 'competitor' has a better 'fitness' it will ultimately strive, while the 'opponent' with a lower 'fitness' is doomed to disappear. This is, however, a somewhat simplistic point of view. An incomplete list of effects (discussed in theoretical biology for decades), that might lead to contradicting outcomes compared to the forecasts made by the simplistic view, follows:

A. 'Fitness' & Statists' Understanding of Reality

Foremost, there is a general misunderstanding of the role of 'fitness' and the selection of more fit or less competitive participants in an evolutionary setting. One often encounters the metaphor of a 'fitness landscape', that is drawn in some multi-dimensional space. While it might be existing for a particular, well defined point of time[2], generally there is no static fitness landscape. One wonders, whether the prevalence of a static fitness in the computer science community [3] is related to the popularity of so-called genetic algorithms among computer scientists. The misunderstanding here and the reason why genetic algorithms almost always fail to show good performance [4] is based on the fact, that fitness function *vary significantly* over time, due to competition[3]. Evolutionary dynamics, such as the one assumed by JA, is about *adaptation* and not about *optimization* (ruling out 'conspiracies' in our setting). Therefore, an outcome *might* be the extinction of a 'conspiracy', but it is neither guaranteed, nor even more likely. The almost always occurring *time-dependent* fitness functions impose effective feedback loops.

For example, technical progress – its impact on productivity still not completely understood in economics – leads to time-varying fitness functions in social networks. Those who adopt early and fully might experience a selective advantage just from this alone, exposing the opponent group to an ever increasing pressure. The technical progress itself might be, however, the outcome of a 'conspiracy', say an industrial normalization working group.

Interwoven with the misconception of static fitness functions is another problem in the discussion about evolutionary dynamics of social systems:

B. Mean-Field vs. Full Dynamics

JA's picture of marginalizing 'conspiracies' by imposing on them a 'distrust tax' and effectively weakening their communication, is also an 'on the average' picture, or a mean field picture as physicists would call it. While 'typically' or 'on the average' the more fit subgroup can outcompete the inferior one, this does not guarantee that this is happens all the time. In fact, there is a non-vanishing probability that it will not happen due to the full dynamics of and within the groups. For example, the communication capacity, which according to JA can be identified with the value or fitness of the 'conspiracy', can only be really determined after many communications events. Fluctuations in and sequential orderings of communication (e.g. in a 'command chain') are not taken into account in this mean-field view of communication capacity.

C. Time-Scales and Fixation Probabilities

The problem of section III-B is related to the question of involved time scales. Even if the biologistic argument on the evolutionary selection against 'conspiracies' is assumed to be correct, a fitness function derivable, still there might occur another problem: when the time-scale of convergence towards a state of marginalized 'conspiracy' differs substantially from the overall dynamics, *fixation* [5] might occur. This concept refers to the fact, that there exist a non-vanishing probability that some 'genotype' (in our setting this corresponds to any mixture of environments built by the society and 'conspiracies' at different levels of effectiveness) will succeed in the evolutionary game.

[2]Deriving a fitness function empirically within a small enough time window seems to be a rather ambitious project, though.

[3]Example: the offspring of a lion become faster by some mutation in the genes coding for muscle proteins. This implies a modified fitness landscape for the antelope living close by. Now, a *co*evolutionary dynamics sets in, favoring faster antelopes in future generations, which implies different fitness functions for the lions, and so on.

Furthermore, the time it takes to eradicate a 'conspiracy' might be rather long – at least longer than the typically time-horizon conspirators take into account. To put it bluntly: why should a 'conspirator' care about leaking and the implied destruction of the 'conspiracy' if he can gain enough on short time scales? Theoretically, a 'conspiracy' *might* be destroyed, but *effectively* every participants gains enough to encourage such 'unjust' behavior, still.

D. Non-Linear Effects & Correlations

There might exists several 'conspiracies' at the same time. Do they interact? Or do the interfere in non-obvious ways? Probably. For example, if two groups of mutually unknown people try to secure government funding for some project, there activities are effectively linked, although the two groups do not interact directly; this happens whenever there are limited resources[4]. And the ultimate resource is obviously state support for some project or agenda. Now, what if there are two implicitly competing 'conspiracies' and by chance one is hit hard by leaking? While they might have paralyzed each other in the quest for the limited resources, they have created an (inefficient, but non-threatening) equilibrium. After some leaks on group I the second 'conspiracy' is free to move on. In the end, the problems for group I result in a selective advantage for group II, which is now free to exploit the resources of the society and grow as a 'conspiracy' in size and impact.

Such as situation can be put in more general terms of *correlations*, or synergies and synergistic inhibition.

E. Effects of Population Structure & Size

The simple, biologistic point of view also neglects an important feedback loop within the 'conspiracy' itself: non-reliable co-conspirators and supporters acting at low effectiveness might be rooted out by the leaking-based selection. There is not just one trustworthiness and therefore the inner core of the 'conspiracy' might be able to cope with the distrust induced by loosing some co-conspirator at the periphery of the 'conspiracy'. Now, if this happens, the effectiveness of the 'conspiracy' is ultimately increased, as it looses less reliable people. In fact, there is almost always *coupling* at different levels of selection in the evolutionary process [6]. Here, this translates into the question: what is the unit of selection? Is it really the 'conspiracy' or "only" individuals? There are ample biological examples, in which individual sub-populations vanish, while the larger group of genotypes – up to the full ecosystem – is rescued. This, again, points to the importance of *coevolution*, which is completely left out in JA's pamphlets.

IV. Other Open Questions and Aspects

A. Social Relations can hardly be considered a Graph

The assumption, that all relations can be mapped to a simple graph, seems far-strechted. Typically, a link between two people is multi-dimensional; including properties such as trustworthiness, 'value', cross-relations to other, group membership, experiences, shared history, ... Such arguments on the multi-dimensionality of social relationships were recently comprehensively discussed in the blog of Nine Fives Software [7] concluding that social relations – such as the ones in a 'conspiracy' – are not simple graphs.

B. Psychological Effects, Individual Utility Functions, or the Importance of Opportunity Costs

Psychological effects and perception of the 'conspiracy' might actually support its activities and its growth. This is just another potential feedback that was overlooked in JA's texts. The more is publicly known about a 'conspiracy', the more coverage the 'conspiracy' gets in the media, the more valuable membership becomes. Or a perceived omnipresence of the 'conspiracy' might induce fear, which leads to more devoted followers. The rise of the Mexican drug cartels and the sub-culture surrounding them [8] should serve as a warning signal in this regard. Sometimes for a conspiracy it might profitable to have something revealed to create FUD; there might even arise situations where any leak helps to portray the conspiracy to be more powerful and determined than is the case objectively.

Every participant and every citizen has his own utility function[5], following some distribution. Such, it is not clear, what the effects of a wrong perception might be. Here, the concept of opportunity costs seems to be most important and needs to included in study of mechanisms such as the ones proposed by JA.

C. Counter- and Competitive Strategies Exploiting Leaking

These mechanisms, again, can be put in a more abstract notion: there is almost always *coevolution*. One cannot overstate the importance and the impact of this core biological insight. Some effects are:

1) Counter-Attacks: Attacked 'conspiracies' will develop counter-strategies. An obvious target are the resources of the leaking infrastructure, as we saw recently. However, leaking itself might by highjacked and well crafted documents about the leaking infrastructure or organization might be 'leaked' by the 'conspiracy' itself. In particular, the 'conspiracy' might decide to conspire either against 'just' networks/the society or other, competing 'unjust' networks.

An empirical example seems to be the alleged smear strategy to attack WikiLeaks itself [9]; here, the WikiLeaks project serves as a 'conspiracy' from the point of view of some companies. Obviously, not only true facts can be leaked, but also "optimized" ones and thus the biggest impact needs to be assigned to the player who is not restricted by ethical guidelines such as leaking only double-checked facts.

While at the same time, 'obfuscation' of the activities of a citizen [10] or a group of them might be a

[4] One can argue about the limit of governmental resources in the era of banking bailouts, but in other industries there is almost always a cat-fight about such subsidies.

[5] such a function reflect, in economic terms, the utility a participant receives from following a strategy, taking an action, ...

'conspiracy', although it was meant to avoid surveillance by the potentially abusive forces which control (portions of) the data-mining infrastructure on social relations and communications.

2) Arms Race & The Rich gets Richer: A special case of a competitive strategies from above focuses on increased resources due to the destruction of competing 'conspiracies'. Thus, the worst networks might profit more, when competing networks ('conspiracies') are discarded. This might strengthen the most resource hungry and economical focused 'conspiracy' – a model of governance which I will call neo-feudalism in the subsequent parts of this paper.

And there is no guarantee, that the civil society can cope with the most devious 'conspiracy' that was hardened by the competitions and victories over other 'conspiracies'.

D. Technology Focus

Although JA's original texts does not mention the Internet as a technological prerequisite, the distributed, non-local leaking attack against 'unjust conspiracies' implicitly relies on the Internet – due to scaling demands alone. However, it is not clear whether this is a sustainable infrastructure for leaking a) due to various pressures and demands to abound anonymity, b) due to shortcomings of the technology for political purposes itself [11], as well as c) due to seemingly unavoidable cycle of (monopolistic) control of information [12].

E. Leaker's Motivation

The motivation of leakers is, however, not that clear at all. Whistle-blowing is mainly driven by ethical concerns [13], in particular in the health care sector [14] and not by, e.g., financial gains [14]. Nevertheless, the motivation is 'local' in the sense, that it is focused on the individual case, an particular incident. Therefore, it might be a kind of abuse to leverage the whistle-blower's risk taking for some other purposes. While the whistle-blower might be driven by ethical reasons alone (e.g., think about problems in care of the elderly etc.), providing her with a leaking infrastructure under the implicit assumption that this is mainly done to fight 'conspiracies' of and in 'the system' shows an authoritarian and paternalistic attitude.

V. Application to 'Intellectual Property' & 'Security'

> *"Intellectual property is the oil of the 21st century."* Mark Getty in *"Blood and Oil"* in **The Economist** (March 4, 2000), p. 68

The most promising business model is to avoid the free market, but rather leverage size, impact, propaganda, deception, and influence to realize monopoly. This is most evident in the patent systems, that systematically erects barriers to market entry to protect the big, existing players, which seek unrewarded benefits by rent seeking in noncompetitive environments. Although patent reform was demanded [15] as early as 1949, still the route to patent serfdom is not only enforced, but rather accelerated at a breath-taking speed.

The rise of this neo-feudalistic economy is linked as closely to the paradigm of 'intellectual property' as it is to the 'security-financial-political' complex. The players have effectively created a closed network or a 'conspiracy'. Besides theoretical-conceptual and empirical evidence [16], the "intellectual property" ideology and business model of artificial monopoly is still on the rise and will eventually monopolize production in total; thus destroying market economy and a society in which performance is rewarded, rather than the amount of "networking" or "being connected". Note, that profits in both areas ('IP' and 'security') are largely if not exclusively driven by governmental interference and action.

A. Leaking will not help

But is this process[6] attackable by leaking JA-style? Hardly, as I can show based on the biological insight from above:

Fitness- the fitness of the 'IP' and 'security' business models rely heavily on the legislative surrounding and on the perception generated by media. Thus, it is an externality which can be manipulated, but is also in competition for attention and importance. Does it hurt companies seeking monopoly via 'IP' or 'favorable contracts' in the security realm (read implicit subsidies) when their activities are exposed? Well, they are exposed over and over again, but their 'fitness' seems not to be effected, rather they adapt.

Time-Scales
: legislation and subsidy decisions are asynchronous to legislative periods, thus one cannot expect the dynamics to be aligned. Furthermore, the emergence and even more the growth of the absurd aspects of the contemporary patent system – despite the warnings of scholars, practitioners, and small companies – could be regarded as a 'freak incident', a fixation that was never intended, but could not be resolved due to the lack of alternatives; a true prisoners' dilemma. Leaking in whatever media of whatever content on existing players will hardly resolve this dilemma.

Correlations
: rent seeking monopolists work effectively together when it comes to paving the political landscape, but if one guy is neutralized, because some embarrassing background is revealed, this means on the other hand, that the attention of popularity and media attention seeking politicians is not divided among several monopolists.

Utility - consumers might just prefer to pay monopoly profits to be left alone, e.g., when consuming media. Although, the current 'IP' regime to protect un-adapting business models by HADOPI,

[6] note, that it not necessarily needs to be a conscious conspiracy, but rather some dynamics which player opportunistically leverage for their individual profit

SOPA, Three-Strikes, ... is unsustainable in the long run, it might be quite rewarding over a decade or so (compare to time-scales above).

B. What might help

Under the rule of law every 'conspiracy' to obtain undeserved benefits necessarily needs to involve politicians. At least the neo-feudalistic tendencies from above need to have politicians on board to make favorable legislation ('intellectual property') or to hand out contracts ('security'). At the same time any conspiracy in a democracy is necessarily the action of just a few members (see above). Thus, to 'destroy' collaboration in the conspiracy network, it might be a viable strategy to take the leverage from the people making legislation or handing our subsidies; thus, marginalize politicians, and work for a society in which politicians have the least to say compared to any average citizen.

By ensuring diversity, subsidiarity, decentralization, and competition market economies with anti-trust regulation provide – in theory – for this. By democratic principles and – most of all – the rule of law, this is assured in the realm of individual actions, too. So, instead of focusing on leaking as the utopian way to a 'just' society it seems to be more efficient to invest one's resources, time, and efforts into strengthening democratic principles and the rule of law.

VI. A Research Proposal on the Resilience of (Social) Networks to Non-Local 'Attacks'

To analyze the effects of leaking of information on groups immersed in a society one needs to account for some if not all of the potential feedback mechanisms from above. The following gives an (incomplete) list of details, that might prove useful:

A. An Alternative Route – An Improved Network Approach

First of all, one needs to go beyond the static picture of networks as a pure topological picture cannot reveal effects of feedback, amplification, fixation, or coevolution. This requires simulation or modeling of the *time evolution* of the networks, 'conspiracies', and the society; see section VI-B. But first we have to define, what to measure to quantify the effects of leaking – we need a 'value' or 'fitness' of the conspiracy network.

According to Metcalfe's law [17] the value v of a (sub)network with N nodes scales as $v_M \sim N^2$. Reed's law [18], on the other hand, claims for social networks an exponential $v_R \sim 2^N$. These are purely structural estimates, which omit weights of links altogether. As a first approximation v_M and v_R can be used for a broad overview in the time evolution of the networks – note, that this still requires simulation of the dynamics. Structurally, however, there are boundary conditions that must be met, e.g., Dunbar's number [19], which is the number of people one can maintain reliable social relations to. As this number is of the order of 150, topologies of real communication networks are only a fraction of the theoretically possible networks.

In a next step of getting more detailed, links in the network are not homogeneously important or weighted. JA's proposal is already aware of the importance of weights of the various links. One way to become more detailed here, could be Beckström's law [20]which reads

$$v_B^j := \sum_{i=1}^{n} V_{i,j} = \sum_{i=1}^{n}\sum_{k=1}^{m} \frac{B_{i,j,k} - C_{i,j,k}}{(1+r_k)^{t_k}}$$

where v_B^j is the value of the network for node j, $V_{ij}$the (asymmetric) value of all interactions of j with node i, $B_{i,j,k}$ the benefit node j obtains from communication or transaction k with node i, $C_{i,j,k}$ the respective costs, t_k the time passed since the transaction or communication event, and r_k some interest rate to discount to present day value via the factor $(1+r_k)^{-t_k}$. But what are those costs and benefits? When it comes to scenarios of corruption, one possible way to achieve this, would be to set $B_{_{i,j,k}}$ proportional to the subsidy awarded or the profit realized based on some legislation. The costs would be just the bribe itself. Note, that $C_{i,j,k}$ is *not* the cost to society, as this becomes an externality. In this setting, the value of the 'conspiracy' would dramatically be reduced if, for example, politicians would not be able to hand out subsidies that easily (reducing $B_{i,j,k}$). Note, that also slowing down the processes, leads to a reduction the value v_B by the discount rate (here, t_k increases, when processes become slower).

B. Simulation of Complex Systems

As noted above, it is mandatory to understand the effects of leaking as a process *in time*. A pure statists' view is insufficient to account for mutually related, but not identical mechanisms: feedback, coevolution, and opportunity costs of and in leaking scenarios. Typically, current research on network resilience – here to be identified with the resilience of the 'conspiracy' – is focused on the attack tolerance upon failure or malpractice of single nodes [21], [22]. Criminal networks and efficiency of secrecy sharing was discussed already [23], [24]. What is lacking to this day is a comprehensive, semi-quantitative analysis of all the effects from above (and the ones, that I have overlooked in this comment) on the stability, efficiency, and the resilience of 'conspiracy' networks immersed in the network of the society.

This might be due to a lack of modeling tools – including algorithms, empirical data, etc. – or probably due to the high complexity, that might be prohibitive to such undertakings. Agent-based simulations can be an effective way to understand *qualitatively* and *quantitatively* the impact of, e.g., public security policies such as telecommunication data retention [25]. Therefore, it seems to a promising route to follow.

VII. Conclusion

A. Summary

Simple biologism is to restricted in its capability to account for non-linear, recursive, and feedback effects that leaking might induce. I argued on this insight (coevolution, feedback, opportunity costs, network theory) that a more

evolved analysis must be undertaken. This remains an open question, but sociology is becoming more quantitative and probably computational simulation techniques can at least answer general questions (while not claiming that concrete situations can be evaluated by such means).

While ethical considerations are valuable motivations for individual whistle-blowers, the 'local-ness' of the leaking has almost always insufficient impact. Rather, one would need more global mechanism, under which leaking is only in exceptional cases mandatory or necessary. But this comes with all kinds of problems and potential side-effects (see above) when it is realized by leaking infrastructures. Global mechanisms cannot be realized by leaking, but rather by concepts from political philosophy.

B. Outlook & Future Work

This document is a first version – a working paper, if you wish – for a more general discussion of leaking and the resilience of complex social systems towards such attacks, as well as the preconditions when leaking might be beneficial to society. Please check the author's homepage for upcoming revisions and further activities.

References

[1] Assange J. cryptome.org/0002/ja-conspiracies.pdf;.

[2] http://online.wsj.com/article/SB10001424052748703989004575653113548361870.html;.

[3] Holland JH. Adapation in Natural and Artifical Systems. Cambridge, Massachusetts: MIT Press; 1992.

[4] Hamacher K, Wenzel W. The Scaling Behaviour of Stochastic Minimization Algorithms in a Perfect Funnel Landscape. Phys Rev E. 1999;59(1):938–941.

[5] Kimura M. On the Probability of Fixation of Mutant Genes in a Population. Genetics. 1962 June;47(6):713–719.

[6] Wilson DS, Sober E. Reintroducing group selection to the human behavioral sciences. Behavioral and Brain Sciences. 1994;17(4):585–654.

[7] Nive Fives Software. The Social Graph is Neither;. http://blog.pinboard.in/2011/11/the_social_graph_is_neither.

[8] Gray S. Santa Muerte: The New God in Town; 2007. http://www.time.com/time/nation/article/0,8599,1671984,00.html.

[9] Greenwald G. The leaked campaign to attack WikiLeaks and its supporters; 2011. http://www.salon.com/2011/02/11/campaigns_4.

[10] Brunton F, Nissenbaum H. Vernacular resistance to data collection and analysis: A political theory of obfuscation. First Monday. 2011 April;16(5). http://www.uic.edu/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/3493/2955.

[11] die Anonymität R. Evgeny Morozov; 2011. http://www.faz.net/aktuell/feuilleton/neue-kolumne-silicon-demokratie-rettet-die-anonymitaet-11546665.html.

[12] Wu T. The Master Switch. New York: Vintage Books; 2011.

[13] Arce DG. Corporate virtue: Treatment of whistle blowers and the punishment of violators. Eur J Polit Economy. 2010;26(3):363 – 371.

[14] Kesselheim AS, Studdert DM, Mello MM. Whistle-Blowers' Experiences in Fraud Litigation against Pharmaceutical Companies. New England Journal of Medicine. 2010;362(19):1832–1839.

[15] von Hayek FA. Individualism and Economic Order. Chicago: Univ. Chicago Press; 1948.

[16] Boldrin M, Levine DK. Against Intellectual Monopoly. Cambridge University Press; 2008. Available from: http://www.dklevine.com/general/intellectual/againstnew.htm.

[17] Shapiro C, Varian HR. Information Rules. Harvard Business Press; 1993.

[18] Reed DP. The Law of the Pack. Harvard Business Review. 2001 February;p. 23–24.

[19] Dunbar RIM. Neocortex size as a constraint on group size in primates. J Human Evol. 1992 June;6(22):469–493.

[20] http://www.slideshare.net/RodBeckstrom/economics-of-networks-beckstrom-national-cybersecurity-center-department-of-homeland-security;.

[21] Annibale A, Coolen ACC, Bianconi G. Network resilience against intelligent attacks constrained by the degree-dependent node removal cost. 2010 Aug;p. 1–29.

[22] Albert R, Jeong H, Barabasi AL. Error and attack tolerance of complex networks. Nature. 2000 Jan;406(6794):378–382.

[23] Lindelauf R, Borm P, Hamers H. The influence of secrecy on the communication structure of covert networks. Social Networks. 2009;31(2):126–137.

[24] Morselli C, Giguere C, Petit K. The efficiency/security trade-off in criminal networks. Social Networks. 2007;29(1):143–153.

[25] Hamacher K, Katzenbeisser S. Public Security: simulations need to replace conventional wisdom. In: NSPW11 (New Security Paradigms Workshop); 2011. *in press*.

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