

**This is an electronic reprint of the original article.
This reprint *may differ* from the original in pagination and typographic detail.**

Author(s): Sartonen, Miika; Huhtinen, Aki-Mauri; Lehto, Martti

Title: From influencee to influencer : the rhizomatic target audience of the cyber domain

Year: 2015

Version:

Please cite the original version:

Sartonen, M., Huhtinen, A., & Lehto, M. (2015). From influencee to influencer : the rhizomatic target audience of the cyber domain. In N. Abouzakhar (Ed.), ECCWS 2015 : Proceedings of the 14th European Conference on Cyber Warfare & Security, University of Hertfordshire, Hatfield, UK, 2-3 July 2015 (pp. 249-256). Reading: Academic Conferences and Publishing International Limited. Retrieved from <http://tinyurl.com/ECCWS2015>

All material supplied via JYX is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.

From Influencee to Influencer – the Rhizomatic Target Audience of the Cyber Domain

Miika Sartonen¹, Aki-Mauri Huhtinen¹, Martti Lehto²

¹Finnish National Defence University, Helsinki, Finland

²University of Jyväskylä, Jyväskylä, Finland

miika.sartonen@mil.fi

aki.huhtinen@mil.fi

martti.lehto@jyu.fi

Abstract

The messages of an influence operation are interpreted in a variety of ways by their receivers. To increase the probability of success, these messages are typically tailored to affect a defined group, a target audience. Target audience analysis (TAA) is a process of finding suitable target audiences for influence operations. There are multiple ways of completing the task, ranging from fast and intuitive to complex multi-staged processes. These processes use the information available at the moment of making presumptions about the effectiveness of competing approaches in order to choose those with best end results.

The internet presents a challenge to this type of sequential, linear process by resisting to stop changing while the process is being executed or to conform to direct causalities. The internet is more like a rhizome, as presented by Deleuze and Guattari in the Thousand Plateaus. Within the context of rhizome, we also suggest defining the target audience (TA) – not as a pre-defined, but as a time-sensitive group, temporarily advantageous to the intended influence effort. This temporal advantage may be due to different causes, such as the topic being promoted by a popular media figure (a blogger for instance) or real-life incidents capable of shifting opinions towards the intended end of opinion charts.

Instead of carrying out a linear, effectively one-time process of TAA we argue that it is possible to use the powers granted by the digital domain to constantly be on the lookout for, not perhaps the rhizome itself, but the 'fruiting bodies' it produces. Whenever the rhizome produces a favourable TA, it can be found by software, analysed and either catalysed into growing or suffocated with a spiral of silence.

Key words: Cyber domain, psychological operations, rhizome, social media, target audience

Introduction

We all know that there are 'swimmers and non-swimmers' among the members of security organizations. Today, the so-called revolution of military affairs (RMA) poses a challenge to the more traditionally educated security authorities in the world's security organizations, especially when working with social media (King 2011). The existence of a new global digital 'meshwork' rises several questions, such as: When automated search technologies limit the scope and diversity of information available to us, based on our search habits, language and geographical location, can the results provided by our search engines really be trusted? To what extent should technical or regulatory structures be introduced by governments to determine the extent of different actors' ability to share and control information? How far should information surveillance go in order to protect the public interest? Can grassroots activism movements have an impact on a society if nothing is private? (IFLA 2015.)

This paper joins the debate on the perception management on the internet. First, we discuss the concept and importance of target audiences (TA) within the concept of influence operations. Second, we take a look at the structure of the internet and at how information is processed within its technological and cognitive layers. Third, we introduce the concept of the rhizome as a possible theoretical approach to the complex interactions of the active target audiences of the cyber domain. We conclude by suggesting a way of approaching the TA by a continuous process, without preconditions and strict restrictions about the nature and volume of the TA.

Target audience analysis

Early on during the research on influence operations in the post WWI era, it was found that no uniform messages exist that would affect all recipients in the same way. Rather, the people receiving the message consisted of multiple and varied target audiences, each perceiving the message in their own way, based on factors such as demography, selective perception, attitudes and other social and mental factors. As a result, the intended outcome would seldom be the type of stimuli – response effect suggested by contemporary behaviouristic approach. (Jowett & O'Donnell, 168.)

From a military perspective these influence operations have been typically referred to as psychological operations (PSYOPS or PSYOP). According to U.S. Army Field Manual 3-05.301, a psychological operation consists of multiple supporting psychological operations, which together will accomplish the given influence task. In order to find the right target audience for a supporting psychological operation, a target audience analysis, is needed. The manual describes TAA as a 'detailed, systematic examination of PSYOP-relevant information to select target audiences that can accomplish a given supporting psychological operation's objective', (FM 3-05.301, 5-1.)

Target audiences must essentially have the following characteristics; they must be reachable for them to be influenced, they must be prone to the influence effort by having specific needs to be fulfilled, their change of attitude must lead to a change in behaviour, and finally their change in behaviour must have significance in the larger population (the overall target audience of the PSYOP) to justify the effort (FM 3-05.301, 5-1).

As a psychological base for estimating audiences' motivational needs, FM 3-05.301 presents the Maslow's famous hierarchy of needs. The manual estimates that this model works very well with most western cultures but has reservations about its applicability with other cultures and people undergoing large amounts of stress. Some more simplified motivation analysis tools are also presented in the manual. This approach, compared to the continuously emerging scientific research on the motivational bases for different uses of the internet may need to be updated or replaced to address the complex behavioural phenomena in the cyber domain. (FM 3-05.301, 5-1.)

What is described in the FM 3-05.301, is essentially a one-time process, although the effectiveness is measured afterwards, allowing for corrections to the persuasion effort to be made. The question we ask is: does the TAA in the cyber domain differ from the TAA processes conducted in other media? We think the answer is affirmative, although the original model is still practical and useful in many cases. The nature of the internet, however, enables the TA to be approached in ways exceeding those of traditional media and thus in our view requires a different approach, harnessing the new powers granted by the digital environment.

What are these new powers? In our view the internet is in a way, a vast metachannel that enables a fast, reciprocal exchange of information between new and traditional media types. For instance, a news service may use its agenda setting function to attract its followers to a certain blog by providing a link within an article. Likewise, a popular person's single comment on a blog or a social networking site (SNS) may incite heated discussion among thousands of people, which in turn may be reflected on a news channel.

The digital domain is not only vast, it's also fast. Breaking news may take only minutes to spread across the globe, along with changing opinions and attitudes of the target audience. A well placed piece of information may transform an indifferent audience into a hostile one within days if not hours. Additionally, in today's world silence itself is also a message. The idea that the authorities responsible for a certain topic would not inform anything about the current crisis is not acceptable anymore. Social media and the mass media are so intertwined that if you are responsible or the spokesman for the case and in the spotlight, you have to communicate. Information void tends to be filled very quickly, and the first, possibly false or even deliberately untrue statements made about the case may be difficult to prove groundless later.

These changes in the digital environment play into the hands of the digitally agile – organizations with means to observe and react to sudden changes in the information and emotional atmosphere of the cyber domain. The arduous work of reading and collecting newspaper and journal articles, listening to radio, watching TV and meeting people in order to keep up with the contemporary themes and opinions is increasingly being replaced by software. This type of software, already commercially available to fit different needs, scans through the digital domain collecting data, opinions, social connections, and even making its own deductions based on the findings. This approach offers a level of real-time situational awareness previously unavailable. One such example is the Radian6 software of Salesforce marketing cloud, which promises to allow a customer to ‘*tap into over 650 million sources from Twitter, Facebook, YouTube, blogs, news, and more to hear what’s being said about your brand*’ (Salesforce marketing cloud 2015).

Other important characteristics of the cyber domain are its reciprocity and equality – we are now witnessing a transformation of audiences from passive information consumers/receivers into active information producers. As anyone can post a comment or create a site for presenting their ideas, the gatekeeper function of the media is not as obvious as with traditional media, although the search engines such as Google, Yahoo, Bing etc. may be seen as having gatekeeper functionality (especially with new phenomena). The active nature of the audience makes it not only the target of influence (influencee) but also an influencer. This characteristic capability of creating new phenomena, trends and opinions is not available *en masse* in the traditional media.

Is the concept of TA relevant in the internet? With the traditional media it makes sense to select specific audiences, as one must choose between numerous influence channels, such as TV and radio channels (and broadcasting times), newspapers and magazines. As these media do not have instantaneous feedback mechanisms comparable to the internet, the message and its recipients must be based on educated guesses of the most optimal selection of TA’s versus the resources and influence channels available.

In the cyber domain, however, TAA models made for traditional media may not be applicable. The entirety of the billions of communications taking place on the internet does not wait for the operators of the TAA to complete their process, observe the effects and adjust their measures. The TA is a constantly moving, living entity that ‘changes behind your back’. One possible avenue is to begin anew with a new approach. Instead of utilizing models more adept with traditional information distribution channels with their more defined sender/gatekeeper/receiver –structure we suggest focusing on how the cyber domain processes information.

Five-layer cyber domain

Cyber domain can be modelled as a five-layer structure. Applying the Martin C. Libicki’s structure for the cyber domain we have modelled a five-layer cyber domain model: physical, syntactic, semantic, service and cognitive. The physical layer contains the physical elements of the communications network. The syntactic layer is formed of various system control and management software and features that facilitate interaction between the devices connected to the network. The semantic layer is the heart of the entire network. It contains the information and datasets in the user’s computer terminals as well as different user-administered functions. The service layer contains all those public and commercial services available in the network. The cognitive layer portrays the user’s information-awareness environment: a world in which information is being interpreted and where one’s contextual understanding of information is created. The cognitive layer can be seen from a larger perspective than the mental layer; including the user’s cognitive as well as emotional awareness. Concepts related to emotions, such as trust, acceptance, and experience, are central to emotional awareness. (Libicki 2007.)

In this three-dimensional cyber domain, the target audience presents itself in each layer as a different entity. In order to effectively achieve the intended effects, it is important to consider all the physical and virtual entities of the target audience.

In the physical layer, the target audience is presented as physical networks and devices, whose intelligence grows continuously. In 2014, over 1,2 billion smartphones were sold globally. In the physical layer people can be located as physical identities, and a smartphone can act as a personal tracking device, enabling constant surveillance. Today, electronic devices process more and more information about our location, information that increases the usefulness of certain applications or transmit our location to another person, either purposefully or unintentionally. Applications include location-based marketing services, map and navigation applications, technology assisting in different recreational activities and surveillance applications for enhancing personal security. Many of these applications collect location data that is not essential for the operation of the application. Location data can also be effectively used for illegal activities.

The syntactic layer includes the software that provides the operating instructions for the physical devices. In this layer the TA is presented as Internet Protocol (IP) or e-mail addresses and as user ID's, in other words as multiple virtual identities that connect people to a certain physical device or service.

The semantic layer involves human interaction with the information generated by computers and the way that information is perceived and interpreted by its user. In this layer the TA presents itself as data and information, including image, text and audio files. In a digital society, the smart devices of the physical layer in connection with the diverse information production of the semantic layer allow the TA to be both the user and producer of digital content.

Digital services are implemented in the internet servers. More advanced user applications are available via "App stores" for those cases where the local performance in the terminal itself is still practical and thus has value. More and more intelligent algorithms are under development to make services more intuitive. Some services that are implemented via cloud computing and IP-protocols are used as a backbone for communication. To be successful as a digital society, it is necessary for the member states to have been able to create a strong ecosystem of digital services that has propagated skilfulness, eased the acquirement of investments, developed the infrastructure and attracted business (ICT 2015 WG 2013).

In the service layer, the TA is presented as different networks of various social media, such as Facebook, Twitter or other social networks, distribution lists, subscribers and so on. Our virtual identity enables us to create different networks in which we participate through the identity we have chosen. In different services the TA can present itself as remarkably varied entities, with different values and motivations driving behaviour.

In the cognitive layer, the TA consists of human beings who can be affected by cognitive and psychological means. In the cognitive level, a human exercises processes of knowledge and understanding linked to emotionality, rationality and the ability to make observations and decisions. In the cognitive level, we process the information we have received. From the viewpoint of cognitive psychology, the essential theme concerning the TA is the cognitive processes related to creative thinking, perception, learning and problem solving. To affect a TA it is imperative to understand both individual and group behaviour, because in the cognitive layer we, as rational and emotional beings define our behaviour and actions based on the information stream that passes the entire structure of the cyber domain.

The first four layers indicate the location and the nature of the TA. From each of these layers it is possible to find the essential presence of the TA and define the identity characteristic for the layer. The cognitive layer presents the TA in the rational and emotional level and thus also the means of affecting it. This forms the base for the rational and emotional identity of the TA in the cognitive layer. Table 1 shows the TA representations in the different layers and the equivalent TA identity.

Table 1 *Manifestation of the cyber domain layers and identity of the target audience*

Cyber domain layers	Manifestation	Identity of the target audience
Cognitive layer	Human being	Rational-emotional identity
Service layer	Network member	Network identity

Semantic layer	Information	Information identity
Syntactic layer	IP-, email-address	Virtual identity
Physical layer	Device	Physical identity

From the TA perspective, the cyber domain layers form an entity with each layer having its characteristic rules and causalities. Starting from the physical layer, within each layer the level of abstraction increases and the phenomena get more complicated. In the physical layer the number of devices is limited, although the Internet of Things is forming into a system of billions of units. The number of devices an individual person can have is nevertheless limited. Similarly, in the syntactic layer the TA will have a limited number of virtual address identities.

The quantity of information in the semantic layer is growing rapidly. The Google CEO Eric Schmidt spoke at the Techonomy conference in Lake Tahoe on August 4, 2010. 'There were 5 exabytes of information created between the dawn of civilization through 2003,' Schmidt said, 'but that much information is now created every 2 days, and the pace is increasing. People aren't ready for the technology revolution that's going to happen to them.'

We create 2,5 quintillion (2.5×10^{18}) bytes of information every day, for instance the New York stock exchange by itself accounts for 1TB. In Facebook there are 40 billion images (4PB). The flow of data makes the task of finding the essential information ever more challenging. To control this vast amount of data, different types of Big data analysis tools and algorithms are being developed and are rising to the challenge of controlling the information on target audiences.

In the service layer both the level of networking and the number of users are strongly on the rise. In the year 1998, 3,6 percent of world's population was using the internet. Today there are about 3,0 billion users (42% of population). Every day over 400 billion emails are sent, 500 million blogs updated and the Google search engine used for 3,5 billion searches. During its first ten years of operation, Facebook accumulated over 1 billion users. The number of mobile phone users in the world exceeds 4,6 billion.

From the perspective of influencing the TA, the cognitive layer constitutes an entity that differs from the others. The existence of the human perspective and the cognitive changes in the TA are highlighted when time, space and environmental conditions change. Today, a soldier that enters a battlefield has with himself a personal terminal which allows him to connect to a network with different identities, utilize the information environment he controls and participate in the service environments and networks, with certain limitations, of course. The most important changes take place in his world of experience and reality, in how he perceives his surroundings in the battlefield conditions.

Hybrid nature of the internet

Glassman & Kang suggest the concept of Pragmatism to explain how information is distributed and organized on the internet. In their problem-based learning/knowing/development process each individual processes information based on his/her own logic/architecture. Instead of a top-down information flow with gatekeepers, information is exchanged and accessed in parallel, self-organized processes. As in the *Kohonen network* (of neural networks), it will be impossible to predict how information will be perceived by the receivers. (Glassman & Kang 2010.)

When contradictory information is presented, an exchange of opinions takes place. These interactions can be simulated by mathematical models to observe and predict changes in a network's climate of attitudes. A relatively new branch of physics combining social and political behaviour with statistical physics is called sociophysics. There are multiple approaches available within this framework that offer promising ways of observing both information flow and reciprocal interactions in the cyber domain. To further advance the usability of these models in the real world, mathematical representatives of certain behavioural phenomena can be used.

In one such study Crokidakis et al (2014) included contrarians (those with opposite opinions to the majority) and intransigents (individuals reluctant to change their opinion) to a pool of agents with opposing opinions (with the option of indecision also available). The results were consistent with real-life observations, showing that when extreme opinions are present in the pool, final decisions are more difficult to reach, and when there are inflexible agents present, consensus is impossible to achieve. It has to be noted that this study assumed all individuals to be able to communicate with all other members, which is also the case with the rhizome model introduced below. Although it is not possible within the scope of this paper, further examination of sociophysics' applicability in the rhizome framework is in order. (Crokidakis et al 2014.)

According to Munro (2005, 2009), information and communication networks can be used as a tool for productive purposes and for innovation. However, such networks can also be used as a weapon for destructive and defensive purposes, which has been characterized by the phrase 'information warfare'. Information technologies and communications networks are both the weapons and the targets of these information warfare operations. The doctrine of information warfare was first given systematic formulation by the researchers of the RAND Corporation and forms a significant part of the Pentagon's Revolution in Military Affairs (RMA). The researchers made a distinction between two general forms of information warfare, 'cyber wars' and 'net wars'; the former pertaining to high-technology attacks and the latter concerning broader social uses of information warfare also in conflicts other than war. Under this new doctrine there is a 'blurring of the traditional boundaries between what is military and what is non-military'. Information warfare concerns how people orientate themselves in the world in terms of what they believe about themselves and their environment. This selection of definitions makes it clear that information warfare is conceived from the outset as an explicitly phenomenological affair. This information revolution can also be utilized by different NGOs to spread their own stories that contrast with mainstream media portrayal of their activities.

Theorists of computer culture have identified the richly connected, heterogeneous and somewhat anarchic aspects of the internet as characterizing a rhizomatic social condition (Coyne 2014). The information system network serves as a description of a technical system, but rhizome meshwork describes the wider social, cultural and political milieu. The information system network, reduced only to the technical issues is based on the idea that some kind of hidden authority still lingers, controlling and stabilizing the flow of the internet as if it was a subway system. The concept of the rhizome presents an attempt to undermine this authority over the network. The problem with the aforementioned system's technological thinking is that within this concept everything derives from the main trunk, and there is a hierarchy of dependence. (Coyne 2014.)

The designers of system thinking seem to have great difficulties in disengaging from the metaphor of the tree-structure. Western tradition of the reality is based on the idea of permanent, unchangeable and true nature of reality (being). In the mathematically based major science there exists an attempt to find the first and ultimate point or to concentrate in the beginning or the end of something instead of the middle or cross lines of living and changing situations (becoming) (Chia 1999, 214). However, rhizome "is" not a system but a becoming meshwork with endless bulbs and tubes. The postmodern reality is not hierarchical and orderly anymore, it counters the spirit of the dialectic. The universe is not necessarily made up of a series of stages toward technological enlightenment. For the Platonist, everything is just a copy or representation of the original ideal, but there is not an original idea, because we cannot prove it. We only have to believe it as the system of God. The tree of science gives expression to a regime of tracings and puts them in a hierarchical order, but this is only an expression or representation of a possible reality. (Coyne 2014.)

A rhizome has no beginning or end; it is always in the middle... Where are you going? Where are you coming from? What are you heading for? These are totally useless questions on the surface of rhizome (Deleuze and Guattari, 25).

But where is the usefulness of rhizome? According to Coyne (2014), the circular motion of this understanding can certainly be described benignly in network terms as a feedback loop. The process involves a backwards and forwards movement, a constant process of revision, a cycle of understanding that converges on a practical understanding available at a given time. This interpretation of the rhizome offers an insight of timelessness, perhaps not as absence of time itself

but as the absence of linear causality of events. What if we do not begin with the TA but with the end result? What if we first define the 'observable behaviour change' we seek and then observe the rhizome for indications of this happening? Once we spot something that indicates a fruitful possibility, we interact with it and observe what the rhizome produces. Perhaps, not as the initial sequence but at the end of the process, we discover our target audience.

Conclusion

The cyber domain can be approached as a rhizome, an entity that consists of the vast number of interactions between the different representations of human identities in all the five layers of the internet. Human beings and the increasing number of intelligent devices have created a complex interacting abstract machine, maintaining a continuous feedback loop that constantly creates new ideas. Once a new idea is created in this cyber domain, either by a single individual or by the workings of the internet as a neural network, either by a true incident or by a fabricated event, it collides with other ideas, possibly creating a favourable situation for advancing an interpretation of reality that conveys the essential message of an influence operation. These situations can be utilized by the digitally agile, those with sophisticated means of finding these opportunities.

The notion of using, for instance, real-life events or opinion leaders for promoting an attitude shift is not new, but the level of opportunities offered by the vast meshwork of the internet, scanned by sophisticated software is. Some type of profiling exists in all the five layers of the cyber domain. The devices of the physical layer, syntactic driver software and the multitude of services all gather data for different uses. The increasingly complex and intelligent marketing software, for instance, assist in finding (and creating) time-sensitive target audiences that would otherwise fall outside the scope of influence efforts. These programs, combined with the different tools that try to analyse our personality and objects of interest based on our behaviour on the internet allow us to be targeted by marketing solutions with previously unavailable (inexistent) precision. The same type of software can also be used for other types of influence efforts, including political or criminal uses.

The user, existing in the cognitive layer and using the services provided by the service layer may not be aware of the existence and the threats of the other layers. Someone seeking to be objective and looking for unbiased information about a subject may not notice being given choices from a very limited pool of options. A search engine may act as a gatekeeper, offering only certain options tailored by the results of complex calculations. A familiar and reliable net site may be subject to a cyber-attack, not easily noticeable and offering links to information provided by the attacker. Thus one way of conducting an influence operation in the cyber domain is to maintain the 'information bubble' around the internet user, but to allow this bubble to travel only to neighbourhoods chosen by the influencer.

Discussion

This paper joins the debate on the perception management on the internet. We argue that the classical models of communication do not function anymore in the rhizome networks for several reasons. Firstly, the cyber domain is so highly technologically sophisticated that the common people have no possibilities of understanding how the technical networks function. The only possibility is to roam on the surface level, clicking the mouse and surfing from site to site. Secondly, the networks are so meshed, interwoven and complicated that a message, once sent, never maintains its original meaning. It is exposed to continuous copying, repeating and is subject to new interpretations. Thirdly, the more we use these new information technology solutions, the more we create our own information bubble. In a way, we are losing the tree of knowledge and moving towards information meshwork or rhizome networks.

This paper is an effort to approach the concept of the target audience from the theoretical framework of the rhizome. Our further research will look more into the nature and causalities of the interactions taking place on the rhizomatic internet and study how our existence in the cyber domain shapes our

perception and behaviour. The purpose of this paper is not to propose a solution but to introduce an approach to our further studies of the behavioural phenomena taking place on the internet.

One such study would be to create and test different influence models in the sociophysics framework. This would require mathematical models assessing the effects of personality and different ways of persuasion, for instance. The development and testing of such models could, however, produce valuable information about the overall (and possibly negative) effects of different influence types. As noted before, in the cyber domain influence attempts can in the end have more adverse than positive effects.

Are there limitations to this type of TA analysis we suggest in this paper? In theory the internet is an unlimited network between equal partners, but in practice a few important limitations should be considered.

First of all, it is important to acknowledge that not everyone in the world has access to the network. Especially when accessing TA's in areas with limited internet access the findings may be strongly biased and thus not present the overall attitudes of the population. This limited access may be a result of both limited technological infrastructure and some type of censorship applied by governments.

The multitude of languages used on the internet is another hindrance, if not an outright limitation. The increasing number of sophisticated translation software, however, is rising to the challenge of crossing the language barrier. Search program's selection of SNS programs is yet another limitation. Most publicly available analysis programs are limited to most common SNS programs, such as Facebook, Twitter, Instagram etc. Those not involved with these popular networks fall outside the coverage of the most common marketing software solutions.

References:

- Chia, R. (1999) "A "rhizomic" model of organizational change and transformation: Perspective from a metaphysics of change", *British Journal of Management* 10, 209-227.
- Coyne, R. (2014) "The Net Effect. Design, the rhizome, and complex philosophy", http://www.casa.ucl.ac.uk/cupumecid_site/download/Coyne.pdf.
- Crokidakis, N, Blanco, V.H. and Anteneodo, C. (2014). "Impact of contrarians and intransigents in a kinetic model of opinion dynamics", *Physical Review E*, 89, 013310. doi:<http://dx.doi.org/10.1103/PhysRevE.89.013310>
- Deleuze, G. and Guattari, F. (1988) *A Thousand Plateaus: Capitalism and Schizophrenia*. London: Athlon Press.
- Glassman, M. and Kang, M.J. (2010). "Pragmatism, connectionism and the internet: A Mind's perfect storm", *Computers in Human Behavior*, 26 (2010) 1412–1418. doi:10.1016/j.chb.2010.04.01
- ICT 2015 –working group report, "21 polkua Kitkattomaan Suomeen (21 paths to frictionless Finland)", Ministry of Employment and Economy, Helsinki , January 17th, 2013.
- IFLA 2015. "Riding the Waves or Caught in the Tide? Insights from the IFLA Trend Report". The International Federation of Library Associations and Institutions (IFLA), http://trends.ifla.org/files/trends/assets/insights-from-the-ifla-trend-report_v3.pdf
- Jowett, G.S. and O'Donnell, V. (2012) *Propaganda & Persuasion*. Sage publications.
- King, A. (2011) *The Transformation of Europe's Armed Forces*. Cambridge University Press.
- Libicki Martin C. (2007) *Conquest in Cyberspace – National Security and Information Warfare*, Cambridge University Press, New York.
- Munro, I. (2009) "Defending the Network Organization: An Analysis of Information Warfare with Reference to Heidegger". *Organization*, vol 17(2): 199-222.

Munro, I. (2005) *Information Warfare in Business. Strategies of control and resistance in the network society*. Routledge.

Salesforce marketing cloud, advertising Radian6 (2015), <http://www.exacttarget.com/products/social-media-marketing/radian6> January 18th, 2015.

USA Joint Publication 3-05-301. (2003) *Psychological Operations Tactics, Techniques and Procedures*, <https://www.fas.org/irp/doddir/army/fm3-05-301.pdf> October 1st, 2013.