Flow Experience Related Perspectives of Digital Persuasion

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Abstract. Characteristics of digital influence as a result of the use of specially organized computer programs and online facilities are discussed. Since the results of this influence may be regarded as an endeavor to provoke a sort of a digital persuasion, the analysis turns to the patterns of captology (CAPTology means an acronym: Computers As Persuasive Technologies) introduced by B.J. Fogg. Obvious psychological mediators are proposed, including overt ones (aka attractors), and latent ones (aka latent mediators). The selected patterns give rise to attempts aimed at reinterpretation of empirical studies performed by the authors during the last two decades. Thorough motivational research aimed at investigation of psychological impacts through overt and latent mediation has been done within communities of online video gamers and hackers who appeared to participate in the studies during the specified period. Through reinterpretation, both attractors and latent mediators have been presented as motivational patterns for the research participants to go on with the selected activities, i.e. gaming or hacking. Attractors are shown to be interactive motivation, while a latent mediator has been shown to be flow experience. While attractors and mediators can be possibly presented as being the opposites, they have been shown to impact the study participants uniformly.

Keywords: persuasion, captology, flow experience, attractors, latent mediator

Introduction

Psychology of persuasion is a growing field of studies [1]. Persuasion may be verbal and visual, overt and latent, direct and mediated by signs and/or instruments for distant communication. Patterns of mediation are of primary interest since the modern world – the world of the wide web – is overwhelmed with mediation facilities. The most important are online media and computer network facilities based on digital transactions. To be successful in changing people's attitudes or behaviors the software programs need to be interactive. Needless to say, interactions form a milestone in the use of digital technologies. Human beings may be unaware of any persuasive, deceptive, coercive or cheating features inherent of visiting various web-sites or the use of

numerous computers and gadgets such as smartphones, i-pads, readers or smart watches [2–4], as well as designing software pieces such as e-agents and playing an online or mobile game [5; 6].

The persuasive role of extensively used software has been emphasized by B.J. Fogg who first coined the term "CAPTology" from an acronym: Computers As Persuasive Technologies and then in 2003 published a book "Using Computers to Change What We Think and Do" [7]. This concept has got diverse marks: both positive [8] as well as critical – the latter mainly because of being eclectic and rather far from the rules and habits, acknowledged by generations of scholars, of introducing new terminology [9]. At any case, the captology related ideas and the practice are worthy to discuss and to learn more about their usefulness.

Digital technologies are persuasive, since they promote changes in human behavior and/or attitudes in numerous ways, taken as (1) tools, (2) medium or (3) social actors: see more on this 'functional triad' at B.J. Fogg [7]. Fogg analyzes various changes and describes persuasion as a change in people's attitudes and behaviors: namely, a change realized without application of rude methods such as for example deception or coercion. It is important to note that such a change is due to human-computer interactions, not due to computer-mediated communication. Also, following Fogg's captology, genuinely persuasive intents are endogenously built-in, i.e. they are not exogenous. That means, persuasion needs to be planned: any side effects, even serious ones, are believed to be outside the captology field. Successful persuasion and corresponding changes in attitudes and/or behavior might differ. Even minor changes, facilitated by processes of human-computer interaction, show a way for more or less dramatic changes of behavior or attitudes.

B.J.Fogg suggested a term "Captology" and offered a new way of using modern technologies for improving users' lives almost 20 years now. By offering a specialized interaction or content users could change their habits, learn new skills and improve their lives significantly. Following Fogg's idea, persuasive intents are endogenously built-in, i.e. they are not exogenous. That means, persuasion needs to be planned: any side effects, even serious ones, are believed to be outside the captology field. Since that time, a lot of work has been done in terms of offering users specialized/personalized content, whicht could impact their life. But the intent behind this personalization process was driven mostly by advertising efforts.

1 Captology and social media

Even though not planned or predicted by B.J.Fogg, some of the mechanisms of captology were quickly developed and used widely by advertisers. These days users of search engines are getting information and ads based on their previous searches, recent websites used, information from their social networks profiles, keywords from their recent phone calls. Social media users are dealing with armies of paid bloggers and users, promoting this or that product or lifestyle and present themselves as ordinary peer users. Such an attack on users was not planned by researchers, but was used and abused by businesses and search engines creators and made its impact on overall perception of online interaction, especially in information search/exchange.

After noticing such tactics, even not very advanced users take precautions when doing their research online (use anonymizers when browsing, mistype certain words in their own posts in order to hide them, turn off their phones while having serious conversations, create closed social network groups and seriously check social profile of any newcomers). Thus, even when there is no real captology process in work, some of its side effects are already quite widespread. The era of invisible and gentle persuasion became dead even before it started its' life.

Following Fogg's idea, persuasion may happen not only in form of convincing users, but also by training the habits a person acquires by using digital technologies daily. While some processes referring to captology are already working, their efficiency or usefulness are partly in question. Some of the examples could lie in the field of gadgets use: new phones, smart-watches, as well as the ways of using them have been pretty well and quite fast accepted and learned by public. Other examples lie in the field of using the new technology of smartphone applications, or social networks.

Talking about the ways people communicate nowadays and use social media/networks, it is important to step back and look through the changes new technology brought to us during the past years. New-born email communication was becoming widespread in 1990-ies: snail-mail communication has lost its popularity by that time: communication through an exchange of thoroughly written and thought-through letters was slowly fading. An opportunity to write an email and send it quickly to any part of the world brought written communication skills back. Meanwhile, an imitation bias has been introduced: the more an interaction pattern would be able to reproduce face-to-face interaction features, the better it would be [10]. Thus, parallel to technical advances in communication mediums, the users kept reducing their habits of writing down their thoughts and expressing their feelings in writing. Thus, the pendulum swung back: modern technologies offer better and faster, compared to an exchange of written messages, ways of communication, namely, sending/receiving audio-messages, videos, or photos. So sound chats and photos, mediating the exchange of expressions and impressions, took the place of textual communication [11]. As Snapchat and Instagram are replacing social communication platforms, the amount of thorough verbal descriptions appears to be radically reducing, being replaced by images, selfies, and videos.

The opposite mechanism of a "negative" captology process is represented by a so-called "Facebook depression". While researchers are still arguing whether Facebook tends to make users depressed, many of them complain that processes of constantly browsing highly positive posts from online friends and endless vacation pictures makes some of them feel bad [12].

Another change worth mentioning is presented by a new communication etiquette: if 20 years ago people used phone communication without any planning, just politely asking respondents if they have time to talk, nowadays users have to plan any way of face-to-face communication, which demands both sides to be present in the conversation, be it a simple phone call or video-conference. It doesn't sound appropriate for modern teenagers (and sometimes adults) to "just call". Sh. Turkle discusses the new etiquette of teenagers: their main way of communication is texting and it is considered impolite to knock at the door; to ask a person to come out you need to text first, even if you are just 15 feet away [13]. At the same time, asynchronous communication

became very widespread - it is ok to start communication with a stranger, using various types of messengers or even texting.

Research of teens' communication culture shows that visual – photo – component is taking over the verbal communication. Such effects lead to increased depression rates. It is well known how important is appearance in adolescence; the increased use of selfies often facilitates critical thoughts and concern referring to their face and/or shape. At the same time, video communication is becoming acceptable by families as a way of communication between family members who have to live and work in remote areas [14].

2 The search of mediators for persuasion

Persuasion operates through psychological mechanisms – cognitive, motivational, affective, attitudinal, subliminal, etc. Impacts may possibly take the form of new mental links and particularly of psychological transformations which are important in modifying the operation of psychological mechanisms which mediate goal setting, decision making, assessment and acquisition of stereotypes, re-patterning of knowledge structures, etc. Persuasive digital technologies impact and transform mental processing: psychologists are aware that any digital element such as a computer "serves as a new tool for mental activity and thereby transforms thought" [15; p. 379]. Transformation means that new psychological plans and strategies, and/or goal setting and decision making procedures, as well as updated learning and working skills, etc. emerge, and possibly substitute mental mechanisms which were formed earlier, since the latter ones often turn out to be less effective than the new transformations, or newly-transformed ones.

Digital persuasion is a sort of an "overt" – that means, easily observed and anticipated level of behavioral/attitudinal changes [7]. There are many reasons to differentiate additionally latent behavioral/attitudinal changes – these are often fundamental in their impact and may result in both immediate and postponed outcomes. Latent changes may refer to subsequent forms of behavior, not to the actual ones. Also, from an acting human being's and/or observer's perspectives, changes may be productive or counter-productive dependent on assessments of outcomes; these assessments may often be alternative. Though the changes may be minor ones, the result in restructuring (transformation) of mental content may be serious enough [15]. A good example of a major transformation was described by Sh. Turkle [13] in her very first book on psychology of handling digital technologies in early youth: upon having contacts with computers, younger children come to a conclusion that these are "sort of alive" (i.e., intermediate between "alive" and "non-alive"), and this idea has not been registered earlier in Piaget's [16] studies of children's concepts.

Thus, computer-mediated persuasion is dependent on certain mediators whose function is to give rise to various changes of behavior and/or attitudes. When the changes are the ones that have been overtly anticipated – the case, which is thoroughly investigated in the Fogg's book [7] – the mediators of this type might be called *attractors*. The mediators which stimulate postponed forms of behavior we will call *latent mediators*; it is reasonable to differentiate them from *overt mediators*, or attractors, leading to anticipated forms of behavior/attitudes change. Both types of media-

tors may be selective in the effects they cause. Indeed, while although practically all the digital technologies are persuasive, the impacts are often selective.

Selective persuasiveness gives a cue that some fundamental psychological mechanisms cause and give rise to possible latent behavioral/attitudinal changes. Another important point is that it may happen that an important attractor which results in overt behavioral/attitudinal changes, is not the exclusive mediator: other mediator(s) may cause latent changes which are to take place in the future. Mediators leading to latent changes may be latent indeed, i.e. cannot be easily traced through possible behavioral/attitudinal changes.

To analyze in more details processes of overt persuasion causing various selective changes in behavior and/or attitudes, as well as inherent latent mediators, we reinterpret in this paper the previously published empirical studies. These studies refer to motivations of the members of new communities which came into being with the advance of the digital communities such as communities of computer hackers and online gamers. In these studies different types of motivation are presented as a psychological mechanism playing the role of a persuasive mediator.

3 Digital interaction as an attractor

As it was mentioned above, several online studies of hackers' behavior have been done in early 2000s. At first, it was supposed that cognitive motivation – the one the hackers themselves always name as an explanation of their activity – is not the sole motivator. Based on the results of the content-analysis study of 279 self-presentations posted by hackers at the web-site www.kuro5hin.org in 2000, it was supposed that interactive motivation is no less important for hackers than curiosity – a personality trait which definitely refers to cognitive, or informative motivation [17]. Indeed, 59 % of postings contained some (often weak) form of a sender's willingness to start interaction. Social forms of motivation were less impressively stated by hackers, compared to the cognitive motivation, but the analysis showed that social motivation was an important *attractor* for the hackers [17].

This finding was important for the study in which examples of both cognitive and social forms of motivation were formulated and presented to hackers. Indeed, the results of the factorial study show that the supposed social motivation is connected to the cognitive motivation [20].

3.1 Cognitive and social types of hackers' motivations

In the empirical research of hackers' motivation the methodology based on the semantic differential technique [21] was used. The main purpose of the study was to reveal the hackers' verbal replies concerning their motivations, based on evidences expressed by a large sample of hackers. Thus, it was intended to put specially organized questions to a large sample of self-selected hackers.

The underlying idea was to identify the most meaningful categories, constituting the "semantic space" of personal constructs which people use to categorize any input information. The technique goes back to Osgood's et al. [21] method of semantic differential and to Kelly's personal constructs theory [22]. The resulting *multiple*

identification technique has been worked out. It was used previously, for example, in the study of university students' motivations [23] and in mass political psychology studies [24].

The multiple identification technique allows the scholars to identify the semantic space of participants' motivations, based on their matching of possible motivations to possible actions. During the research procedure the participants have to estimate the probability that a certain motivation could really motivate a certain hackers' action. These estimations give a chance to uncover the actual categories through which a person or a group perceives and evaluates incoming information units; also, to find out which categories are the basic ones, the most important and fundamental for a person or a group, including a large group. The methodology was adapted to the hackers' audience: specific types of actions and motivations were selected.

The study [20] was done online: self-selected participants (N = 338) were recruited from visitors of specialized web sources, popular among hackers. Subjects filled out a web questionnaire, representing a matrix (37 motivations x 17 actions). Participants had to estimate the probability that a particular motivation could really motivate a particular action.

Factor analysis (Varimax rotation) was used: six significant factors, explaining 15.4, 14.4, 13.4, 12.1, 10.5, and 8.8% of dispersion were described. The factors were called: "Need in Recognition – Interaction Avoidance"; "Active Aggression – Passive Instructions Following"; "Typical Hackers' Motivation"; "Self-Realization through Cognition"; "Publicity Actions"; "Peer Recognition – Acceptance in Society". The factor structure shows that the social and the cognitive components of hackers' motivations are tied together in five out of the six factors. Thus, the members of the communities of hackers can be characterized as being both cognitively and socially motivated.

To sum up the results, one has to admit that contrary to popular beliefs but in good correspondence with the results of the content-analytic research, briefly discussed earlier in the paper, hackers did not appear to be complete outsiders and individualists. Instead, replying the questions put to them, they presented themselves as a tightly connected group with strong cognitive motivation and personally interested in peer recognition and other social types of orientation. Since web-sites and web-forums through which hackers mostly interact with peers have been organized as evident attractors for all those engaged in hacking, it is very likely that hackers were attracted both by being a member of community, and by hacking actions. Thus, the hackers' web-sites and web-forums are evident *attractors* – just like any other web-site and web-forum – since they aid interactions and "push" participants to accept peer recognition and social ties as actual motivators.

It is possible to state that interaction, as an anticipated behavioral/attitudinal change characterizing the members of hackers' communities, is at least partly induced by the very existence and popularity of specialized web-forums. This makes it evident that social interaction is one of attractors of hacking. Earlier in the paper it was hypothetically stated that attractors and latent mediators often act simultaneously and possibly independently, and unlike attractors, which are often easily enough recognizable, latent mediators can be most often identified through the use of special methodologies. The goal of our next research was to check this supposition. In doing this we restrict ourselves with motivations as mediators and attractors.

4 Flow experience as a latent mediator

Two types of motivation are often differentiated in psychology: extrinsic type depends on bonuses: money rewards, gifts, and positive feedback; intrinsic type depends on human beings' interests and challenges, when tasks and trials are taken for their own sake. Following Malone and Lepper's study [25], B.J. Fogg [7] distinguishes such intrinsic motivators as fantasy, curiosity, challenge, control, competition, cooperation, and recognition (the latter three refer to a social, or a group level), and makes successful attempts to work out real ways to use intrinsic motivators within persuasive digital technologies.

There are well-elaborated theories and models of intrinsic motivation; the most developed ones are the self-determination theory [26] and the flow theory [27]. Our research was based on the latter. Flow theory is being efficiently used in the area of human-computer interaction. In an analytical chapter it was shown [28] that the use of digital technologies represents a variety of areas to study flow experience. The major research areas are:

- Online marketing/shopping,
- E-learning/teaching,
- Cyber-recreation (often, online/computer/video gaming, including massively multiplayer online role-playing games (MMORPGs),
- Virtual interaction.
- Virtual psychological rehabilitation, such as immersive systems of virtual reality;
- Illicit penetrations into virtual environments and computer security regulations;
- Usability testing, measurement of web-site's attraction, friendliness, adaptation to target populations.

The theory originated by M.Csikszentmihalyi rests on an observation that people report the state of "flow" while doing diverse things like going into their favorite sports or hobbies, or just washing dishes and cleaning the floor. Flow is an experience of deep involvement into a certain activity (and these activities vary greatly), with the feeling of being competent: a new action freely follows the previous one, and there is no need to push oneself to do too boring or too difficult an activity. Usually, in flow nobody feels time passing by. A person experiences flow as "a unified flowing from one moment to the next, in which he is in control of his actions, and in which there is a little distinction between self and environment, between stimulus and response, between past, present, and future" [27, p. 36].

The main antecedent of flow is precise matching of someone's skills (i.e., competence) and task challenges. Flow is placed at the cutting edge of person's skills, and it is a moving target. Increased skills lead to an increase of challenges, if the precise matching has to be saved, and the choice of greater challenges demands an update of skills. With high level of confidence we can state that feedback, interactivity and the match between one's skills and current challenges are the main characteristics of flow as seen from a human-computer interaction perspective [28]. Nowadays, various models of group flow: leadership, or team flow experience are being investigated and introduced [30; 31]; when meaning is created "with and through" group's optimal

experience, engagement is born, «highly sought after by companies because it correlates strongly with high performance. Engagement is what emerges when we are achieving something that exceeds our individual nature…» [30, p. 2].

Since flow is known [28] to be experienced while playing computer games, communicating via instant messaging or chats, web related learning or shopping, and other behaviors related to the use of digital technologies, we **suppose** that flow may turn to be a *latent mediator* responsible for causing latent behavior changes. This hypothesis is being investigated in the current paper by readdressing to the multicultural [31] empirical data collected during the last twenty years.

4.1 Flow experience in hacking: a latent mediator

In the online study of flow motivation in the hackers' communities [18] the participants (N = 457) reported they experienced flow, and thus flow motivation was a latent flow 'crisis' (i.e., no flow), followed again by periods of flow renovation: flow was experienced by the least and the most competent hackers, while moderately competent participants more often than others had reported of 'crisis' periods.

The flow crises were shown to be caused by participants' inability to match step-by-step their updated skills with correspondingly updated challenges. These mismatches lead to a popular and socially accepted escape from the hackers' community through a 'cognitive rise' (an update of competence not followed by an update of task challenges). The flow motivation then changes into cognitive motivation, which is also an intrinsic type of motivation; such type of behavior seems to be a well-known mechanism of escape from hackers' community. This escape method can be easily traced in real biographic stories of hackers who changed their fate to become, for example, experts in computer security.

It was also found [18] that hackers developed two main mechanisms of task choice and goal setting in hacking. Highly experienced participants chose interesting tasks, even if these projects were too complicated. Moderately experienced participants mostly chose tasks, which they felt they were able to complete easily enough, thus saving flow experience. Such a goal-setting process, which leads a person to experience flow all the time, appears to be a rather rare motivational mechanism: most often participants reported they were unable to keep matching their skills (competencies) and challenges, and thus lost the flow experience, only to experience it at a later stage of their task choice processes.

In the reported study [18], it was shown that flow motivation is a *latent mediator*, indeed – hackers make special efforts in task choice and in goal setting to keep experiencing flow. This mediator parallels the previously shown attractor, i.e. interactive motivation. Thus, the hypothesis we put forward earlier in the paper – namely, that attractors and latent mediators may motivate human behavior in parallel – is correct. To check it within another sample, this time consisting of videogamers as specific digital technologies users, we discuss briefly and reinterpret the study, published in [19].

4.2 Playing online games: interaction as an attractor, flow as a latent mediator

This research was carried out within a community of online gamers. It seems to be evident that interaction should be named a strong attractor for the community of multi-user online players.

Online games are a class of group role-play games with rich interaction facilities. These games supposedly contain special sources of attraction, otherwise people would never play them. As an overt attractor we can assume ability to gain achievements, common to a great many of games [32]. Additionally, we may assume the existence of other attractors as well, such as game content, rich communication facilities, invitations to unite in teams and pursue teamwork strategies.

Results of the online study (N = 347) showed that the following factor structure characterized motivations of online players: Flow, Achievement, Interaction, Cognition, Activity/Passivity and Thoughtfulness/Spontaneity [19]. Flow appeared to be the strongest factor, while Achievement and Interaction followed it. In several follow-up interviews, participants (variously competent online gamers) always mentioned such advantages of playing online games as rich interactions and easiness of achievements; some interviewees mentioned also rich cognitive facilities. Neither of respondents mentioned flow experience – this factor, the most heavily loaded one, had to be made evident using special psychological methodology. No wonder that it is never discovered in studies of online gamers, held by observers/participant observers and interviewers. It is worth mentioning that flow motivation has been discovered among the strongest factors within diverse communities of online gamers – namely, gamers speaking Chinese, English, French and Russian [19; 31; 33].

It is important that in the community of online gamers we have found the same attractor (namely, interactive motivation) and the same latent mediator (namely, flow motivation), as in the previously discussed community, that of hackers. This makes us believe that a parallel work of several attractors and (possibly, several as well) latent mediators is a common thing, a usual practice. In our research, it should be mentioned, the attractors and latent mediators were unidirectionally oriented, i.e. both sorts of mediators pursued participants (hackers and online gamers) to go on with the behaviour they had chosen for themselves. Particularly, the *attractor(s)* overtly motivated hackers/gamers to continue the chosen behavior, while the latent mediator was motivating hackers and online gamers in a *latent* manner.

To follow up the study with new samples of the Web users which were almost unavailable at the period when the main part of empirical studies have been performed, we may suppose that quite promising samples of research participants would be all those who play the so-called serious games. Nowadays researchers deservedly give worthy attention to all those who participate in serious games [34]. One more promising area of research in the field of captology would be the attempt to discover hypothetical psychological mechanisms behind social networking – the activity which is highly fascinating to multitudes of the net users [35]. These two areas of studies may be considered as rather attractive regarding the follow-up work in the field.

Conclusion

Persuasion, as it is usually described, seems to represent an overt type of impact through the digital facilities. It was supposed that there are various levels of behaviors and attitudes change, not all of them referring to computer-mediated persuasions. It was hypothesized that one is able to empirically investigate highly diverse mediators, including those which parallel persuasions. A certain type of such mediators was called latent mediators, responsible for non-immediate behavior changes. These types of mediators possibly lead to psychological transformations.

After having reinterpreted the results of online studies within the communities of hackers and online gamers, the suppositions have been confirmed: overt attractors (i.e., interactive motivation), as well as a latent mediator (i.e., flow motivation) have been found and described. Both the attractors and mediators seem to motivate participants of our research series uniformly. It can be hypothesized, however, that various attractors and latent mediators motivate research participants differently, possibly in the opposite manner. This is an interesting situation of mediators in conflict, a perspective for future empirical research. According to the authors' experience, serious games and social networking can be considered as highly attractive activities to follow up the study in captology aimed to search specific latent motivators and attractors.

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