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Article

# Social Laser: Media and Social Mobilization

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**Abstract:** Media is obtaining a leading role in contemporary strategic communication, the development especially visible in the context of social-political and geopolitical conflicts. This study introduces an interdisciplinary theory of Social Laser and applies it in the analysis of social mobilization around the current militarized situation in Eastern Europe. We analyze quantitatively the content of three Swedish newspapers and qualitatively the related Facebook discussions. As demonstrated, social lasing has been employed as an instrument in information warfare. An “information tsunami” was generated by the Swedish national mass media at the outbreak of military events in March-May 2022. It shaped social dynamics on the related social media platform. The intensity of dissident actions increased when the information pressure subsided.

**Keywords:** digital media; Russian-Ukrainian conflict; quantum physics; Facebook; emotional energy; information radiation

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## Introduction

Digital media (both mass- and social media) are increasingly employed in strategic communication that characterizes present-days social-political and geopolitical conflicts (Baden and Meyer 2018; Constantinou 2016; Mitrovic and Perić 2022). While some of the established theoretical approaches view media as a semi-independent agent providing interpretation or gatekeeping regarding the information delivered to the public, others emphasize rather a one-directional relationship between media and various societal forces and domains (Jungblut 2020). And indeed, more evidences are coming out that suggest close proximity of the journalist enterprise to military (Hammond 2000), economic (Grabova 2021) and political (Mitrovic and Perić 2022) actors.

This paper introduces a Social Laser Theory (a modified version of physical laser) that originates from the field of quantum physics (Khrennikov 2016, 2018, 2020). We illustrate the relevance of social laser for the analysis of the reaction in Sweden to the Russian-Ukraine military conflict that erupted in February 2022. Data collected during spring 2022 is utilized to describe the functioning of social laser. Quantum physics has been actively applied in the field of cognitive psychology, social and political sciences during the last decade (Bagarello 2019, Haven 2019, Murphy 2020, 2022, Wendt 2015), and has demonstrated a significant explanatory power when it comes to decision-making processes (Bruza, Wang and Busemeyer 2015). This development is associated with cognitive science's dissatisfaction with traditional probabilistic modelling based on expected utility theory (von Neumann and Morgenstern 1953) and modifications, as, e.g., the prospect theory (Kahneman and Tversky 1979). The use of classical probabilistic methods led to a variety of probability fallacies and paradoxes (Allais 1953, Ellsberg 1961; see Khrennikov 2010, Busemeyer and Bruza 2012 for general discussion).

It should be noted however that we rely not on the direct analogy between physical and social reality but rather on the quantum-like modeling of social processes (for a detailed discussion see Khrennikov 2016). The study builds on an interdisciplinary approach defined as a “transfer of content” between disciplines (Alvargonzález 2011: 393–395). The proliferation of interdisciplinarity is associated with the increasing complexity of social reality and advances in technoscience (Alvargonzález 2011, see also Bruun et al. 2005). This development includes, among others, so-called

“broad interdisciplinarity” involving an interplay between distant disciplinary domains (strict sciences and social sciences in this case), which is typically more challenging but potentially leads to institutional innovations (Bruun et al. 2005: 29–30).

The paper proceeds with an overview of the major theoretical assumptions employed, followed by the case-study and a related research conversation. As concluded, the Social laser theory is capable of providing an explanatory framework of media operation within the context of strategic communication. The current study helped to identify nuances of social lasing and suggest future directions in studies of counteraction.

### Social laser

The classical model of physical lasing builds on the capacity of atoms to absorb and emit light quanta. This process leads to a change in the level of energy: atoms can pass into a state of excitement or a state of relaxation. Relaxing, atoms emit photons that are, with high probability, similar to the absorbed ones. An atom emits one or more photons – in fact, the probability to emit or absorb more than one photon is practically zero, so it is better not consider “more,” the same for humans, at each moment of time one can handle just one portion of information carrying social energy. Physical laser comprises an assemblage of atoms excited up to *lasing threshold* by a purposefully injected coherent cluster of photons. This enables the production of a highly concentrated beam of energy. To increase the effect, optical cavities are employed that further improve the coherence and strength of the beam. Such cavities are known as laser resonators (Khrennikov 2016).

Social laser theory operates with a notion of *social energy* that traces back its history to the classical days of psychoanalysis (Khrennikov 2016). It assumes that social groups and society at large can be imagined as a *gain median* – an essential part of physical laser. Correspondently, individuals are associated with atoms – “social atoms”, which are practically indistinguishable from one another. Personality characteristics and social identities are bracketed. This indistinguishability is context dependent. Of course, each person has her own personal characteristics, say sex, race, nationality, religion, profession. However, in the context of social lasing such personal characteristics are not so important. A person behaves as a whose be social information processor whose behavior is characterized by her social energy gap  $\Delta$ , the difference between the states of relaxation and excitement. In physics, this gap is known as atoms spectral line. Generally, each physical as well as social atom can have many energy levels and hence spectral lines. We restrict our considerations to two level social atoms; we understand well that the real energetic structure is essentially more complicated.

In principle, each (two levels) social atom has its own spectral line  $\Delta = \Delta(\text{atom})$ . For physical lasing, it is important to compose the gain medium of atoms with the same energy gap. It is also important for social lasing. Of course, it is impossible to create the population of atoms, neither physical nor social, having the same spectral line  $\Delta$ . But creation of a population with sharp Gaussian distribution around the concrete  $\Delta$  is sufficient to lasing.

The electromagnetic field of the physical laser is replaced in the Social laser theory by the social information field since it also deals with interactions. Messages generated by mass- and social media are perceived as quanta of social energy injected into the social information field. Apart from social energy (*color*), every portion of information carries additional characteristics such as images and labels, identified as *quasi-color*. The main argument of the theory is that when the excitement in society due to information radiation rises above 50% of the population – *population inversion* – social atoms start to emit social energy. Intensification of the social information radiation increases the probability of coherence between a vector of input and output. Social atoms tend to pay attention primarily to quasi-colors (i.e., labels) without deep analysis of the message itself due to the overall information overload. The emitted social energy can take different forms, starting from comments and “likes” on social media, to arranging for political petitions, and political appraisals. The main feature of those social actions (both in the information and physical spaces) is their particular coherence. Special attention is given to social and media-associated groups and networks that are recognized as *echo chambers*, a form of an optical cavity. They are responsible for enlarging and

refining the output through circular proliferation within the system itself. These are counterparts of lasers' resonators that can be called social resonators.

The crucial condition for initiating social lasing is matching between the color of information communications and the spectral line of people composing a gain medium, i.e., between the portions of social energy carried by communications delivered by mass media and internet platforms and the energy gaps of social atoms. Of course, it is impossible to approach such matching exactly, only approximate matching of the Gaussian form is approachable. In the case of mismatching social atoms would simply ignore news, communications, images delivered via mass media and internet. People with high  $\Delta$  would not react (say by posting at Facebook) to domestic news about the first spring flowers in town's parks.

This is the good place to point out to the important difference between physical and social atoms. The former has the rigid spectral structure. The latter is less rigid energetic system and depending on external conditions the gap between the state of relaxation and excitement can be increased or decreased. For the relatively stable social context, this gap is also stable. We remark that, in fact, the spectrum of a physical atom is neither totally unchangeable. Depending on external conditions physical atom's spectrum can be modified; in particular, in physics it is well known the phenomenon of the spectral line broadening. But generally physical atoms have rigid energetic structure, and it can be modified only slightly.

In this study, we apply the Social laser theory in the analysis of media and the related social reaction to the situation around an ongoing military conflict in the Eastern Europe. The main purpose of this primary exercise is not formal testing of the theory, but close adjustment of the laser theory to the context of social reality.

### Research methodology

The study employs general statistics and a structural textual description. The statistical part presupposed measuring the volume of mass-media publications on the region in focus.

Publications of three daily newspapers – *Dagens Nyheter*, *Aftonbladet*, and *Expressen* – composed the study data set. All three newspapers position themselves as liberally oriented; though while *Dagens Nyheter* (DN) and *Aftonbladet* require readers' subscriptions, *Expressen* provides open access to some publications (*Aftonbladet* 23 June 2020, DN 28 February 2008, *Expressen* 18 September 2017). These newspapers are considered among the top mass media in Sweden (*ExpandTalk* 20 April 2023). We searched within the online content of the selected newspapers using the search word "Ukraine." Further, the volume of publications that appeared during the period October 2021-May 2022 was assessed. Articles, in which Ukraine was listed among several other countries (e.g., countries-participants of a sport competition), were excluded from the dataset.

Next followed the examination of public exchanges on Facebook related to the mass media content. Posts in Facebook groups associated with the three selected newspapers were subjected to a descriptive analysis. This included attention to:

- 1) the structural features of conversations,
- 2) rhetorical methods employed,
- 3) power relationships that shaped communication between readers.

These aspects are grounded in the traditions of Conversation Analysis (CA) and Critical Discourse Analysis (CDA). Conversation analysis deals with structures of naturally occurring conversations (Heritage and Clayman 2010). It has been increasingly employed and modified since the 1990s to systematically study online interactions. International scholarship demonstrated the value of traditional analytical tools and developed innovative analytical constructs (Meredith 2019, Paulus, Warren and Lester 2016). Critical discourse analysis examines the content of the existing discourses, their production, and consumption (Winther Jorgensen and Phillips 1999). In this study, the focus is on the consumption of the discourse generated by mass media.

The analyzed posts appeared in group streams between February 2022 and May 2022. We initially reviewed all the conversations associated with media publications on the conflict around Ukraine and selected 98 threads that 1) contained more than five responses to the initial post and 2)

were entirely focused on the conflict zone itself rather than on related Swedish domestic issues. We resorted to an established approach, applying CA at the initial stage to data coding (Paulus, Warren and Lester 2016) with a focus on relations to the dominant discourse (see on the discourse dominating in European countries Maurer, Haßler and Jost 2023) and overall structure of the online conversation. Additionally, the construction of exchanges, possible contradictions, and their management, accountability, and identities were taken into analytical consideration. Coding was conducted manually and inductively: coding scheme emerged and was refined during the coding process (Saldana 2013). Additionally, notes were taken during reading of every thread to document qualitative features of online exchanges.

Analysis presupposed a detailed description of Facebook threads followed by a search for patterns within the dataset. The major focus was on the dynamics of output regarding the structure of conversations.

Two initial types of reactions to mass media publications were identified: 1) support for the dominant discourse, and 2) deviation from it. Support included general support, support with escalation and support with de-escalation efforts. Deviations were presented by problematizations, challenges, disregard, and punishment/management of deviants. It should be noted that problematizations were not necessarily questioning the dominant discourse, they might refer to the quality of the media publication and the relevance of the publication to the dominant discourse, while challenge always presented an alternative (but not necessarily opposing) to the established rhetoric. In the vocabulary of the Social laser theory the dominant discourse was encoded as  $\alpha$  quasi-color and challenge as  $\beta$  quasi-color. In the lasing terminology, these are the basic quasi-colors of information communication exchange. In the quasi-color vector its first coordinate can take the values, either  $\alpha$  or  $\beta$ , and this is the most important coordinate. We additionally marked unrelated to the main post reactions as parallel discussions, spam and charity requests.

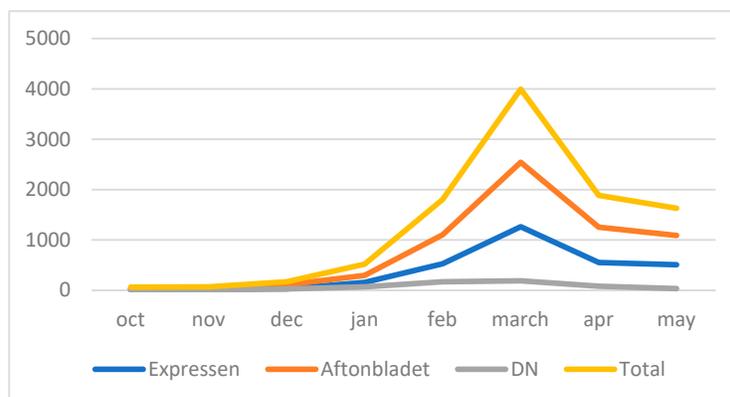
The study confirmed to the ethical standards of online research (Franzke, Bechmann and Zimmer, Ess and the Association of Internet Researchers 2020). Only publicly available data were collected and processed. The analysis of social media materials focused primarily on structural features of online conversations.

### **Swedish media events around the Russian-Ukrainian conflict: A research conversation**

The escalation of a military conflict in Eastern Europe that started on February 24, 2022, received wide attention from the European mass media (Maurer, Haßler and Jost 2023). Analyzing the Swedish context, we will focus on the process of pumping social energy into the social gain medium and on the working of echo chambers.

#### *Social lasing: Energy pumping*

Before December 2021 Ukraine had been almost invisible to the three analyzed newspapers. Rare publications that involved the Ukrainian context dealt primarily with different sports events and very rarely with politics. Though, the volume of attention to the country tripled between January and February 2022 and skyrocketed in March 2022 to reach a level of nearly 4000 publications during this month (Chart 1). *Dagens Nyheter* took the most moderate approach publishing on average 6 articles mentioning Ukraine daily, while *Expressen* released 40 publications daily and *Aftonbladet* over 80 publications. March 2 had become the highest point of publishing. On that day *Expressen* published an article referring to Ukraine every twenty-three minutes and *Aftonbladet* every nine minutes. Such an information intensity could easily correspond to a state of national emergency. The rhetoric about the military conflict penetrated almost every part of the media content, including sections on culture, sport, and private economy. Collectively, the three analyzed newspapers during February-May 2022 emitted over 10 000 publications related to the region in focus.



**Chart 1.** Swedish mass media's attention to Ukraine (October 2021-May 2022). Source: *Research data*.

As shown in Chart 1 energy pumping started in January 2022 followed by a high information load in March 2022. The information pressure turned to be so intense at that point that media professionals themselves became concerned about a possible “overheating” of their readership. Thus, on March 14 *Dagens Nyheter* published a set of recommendations on how to avoid being “paralyzed” by the news. We remark that this problem is well known in physical lasing – a gain medium can be destroyed by too intensive flow of highly energetic photons. According to the Social lasing theory, shock news – about a military conflict in the current case – frequently carries large emotional charge and might quickly excite social atoms. In April-May 2022 emission of social energy by the analyzed Swedish mass media dropped to the level of February 2022.

As was already pointed out, social atoms are not rigid energetic systems and depending on social context they can modify their spectral lines. The energy gap can be adjusted to the color of the dominating flow of news. This feature of cognitive systems simplifies the process of energy pumping into human gain medium. If social atoms were energetically rigid, then only a small fraction of population with initially big  $\Delta$  would be able to consume highly energetic news and reportages about the war.

#### Social lasing: echo chambers

Between March and May 2022, the analyzed 98 Facebook posts of the three selected newspapers emitted in total over 46 500 emotional reactions, over 11 500 comments, and more than 2 700 shares. In this way Facebook representation of mass media worked as multipliers of social energy, that might be further transformed into physical actions, such as mass demonstrations, petition writings, charity collections and more. “Each post in a social group works as a social energy multiplier/information excitation in the echo chamber generated by posted communications not only increase the probability of emission of new information excitations by excited atoms, but they also perform the function of additional energy pumping into the gain medium ‘social group’” (Khrennikov 2016: 15).

Moreover, those Facebook groups functioned as echo chambers aimed at improving coherence of the energy wave and refining it from “social noise” (Khrennikov 2016: 13). Echo chambers are social analogs of resonators of physical lasers. The latter have two functions:

- a) increase the power of electromagnetic field by stimulating excited atoms of the gain medium to emit photons,
- b) improve coherence of the radiation beam.

This system is based on the optical cavity. A reflecting mirror sends back photons emitted by atoms in the gain medium. These reflected photons have the same quasi-color and increase the density of the electromagnetic field in the gain medium. Excited atoms are stimulated to emit photons of the same quasi-color and relaxed atoms absorb photons reflected by mirror. Noisy photons carrying different quasi-colors are generated by the spontaneous emission from atoms. They are

reflected to the directions different from the main axis of the optical cavity and leave the resonator or they are absorbed by nonreflecting parts of the cavity and in this way are excluded from lasing process.

A social resonator works similarly to the physical one. The role of a mirror is played by the internet platform with the possibility to generate posts and reactions on them. But there is one crucial difference between physical and information mirrors. The latter works not only as reflector, but also as a multiplier. Each posted news or communication emits a bunch of “information rays” directed to all possible receivers – the social atoms of echo chamber’s social group. In the quantum model, each post works as an information analog of photon’s emitter. It emits quanta of social energy, the power of the information field increases. Consequently, excited social atoms emit their own posts and comments with higher probability. We repeat that new posts have the same quasi-color as the initiating information excitations that were injected in the echo chamber.

Some members of the social group can generate posts or comments on them with quasi-colors different from the basic colors of the echo chamber. They are also visible for other members of the social group, but the deviation from the basic quasi-color leads to ignoring. Often a social group or platform has moderators (persons or AI-systems) and posts and comments that essentially differs from the basic quasi-color are banned. This increases quasi-color homogeneity.

Let us turn to the collected data, looking at the particularities of energy emission, vector of output, general level of social energy, quasi-color of output, multiplication, coherence and technicalities (see Table 1).

**Table 1.** Functioning of echo chambers.

Analytical Category	March 2022	April 2022	May 2022
Energy level and multiplication	high	reducing	stabilized
Vector of output	prevalence of $\alpha$ quasi-color	more challenges to $\alpha$ quasi-color	strengthening of $\beta$ quasi-color
Coherence	high	reducing	stabilized
Technicalities (looses)	massive	massive	reduced

*Source:* Research data.

#### *Level of energy multiplication in social resonators*

The level of social energy multiplication in social resonators, as say Facebook, can be empirically assessed by the presence and character of physical output. In this study the highest energy emission per post is documented in March 2022. Emission decreases in April and stabilizes in May. The analyzed Facebook discussions from March 2022 are characterized by high emotionality frequently expressed by emoticons (faces, flags, flowers, folded hands). Verbal element is absent in many communications, signaling out exclusively emotional state and emitting energy of a particular quasi-color. Emotions are sometimes mixed and accelerating. Central feelings broadcasted are anger, fear, frustration and helplessness. Verbal responses are short-formulated, and occasionally written with capital letters. Participants address different authorities: God, the Pope, and military alliances. Some participants indicated that they are lacking words to describe their mental condition, that they are disturbed by terrifying pictures posted, and can barely stand the ongoing information pressure. Conversation analysis of online interactions argues that emoticons and typography are employed to compensate for the absence of embodied conduct in online exchanges. Individuals rely on the affordances of technological systems to imbue technologically-assisted communication with expressive components (Meredith 2019: 252).

Treads from this period typically have a simple structure with occasional short second-level exchanges between the participants. Lengthy discussions are typically absent. There is a tendency towards escalation in the Facebook exchanges which frequently meet de-escalation efforts at the beginning of the month. This fact demonstrates the difference in the level of excitement among social

atoms. Escalation, among others, manifests itself in a call for physical violence (towards individuals and social groups) and hate speech. At the end of March in one thread this trend obtains a form of a brainstorm on the cruelest/hardest violent punishments to be imposed on the perceived culprit of the conflict.

The majority of the above-presented tendencies proceed through April 2022 with a reduced scale. The average length of second-level discussions gradually increases, especially when the focus of interactions switches to national issues. The problem of mismatch between energy levels periodically pops up: readers criticize mass media publications for not holding the same energy charge as the dominant discourse, for being opportunistic, and for trying to “cool down” the situation. While at the beginning of March, some media publications are seen by the audience as too radical, in April more claims come up that articles are not radical enough. The energy level of the audience at this time might be higher than that of mass media. This phenomenon once again demonstrated a discrepancy between energy levels. Social atoms can exhibit two levels of social energy – excitement and relaxation. For communication to be effective it should match the current energy level of the social atom (Khrennikov 2016: 8). In contrast to a physical atom, a social atom can express her dissatisfaction by mismatching the color (the social energy amount) carried by some mass-media communications with her own spectral line – the energy gap between the states of relaxation and excitement. The overall level of emotional energy seems to stabilize in May with more individuals questioning the politics of mass media: quality, reliability, and consistency of the information broadcasted.

*Vector of output: color and quasi-color*

We assume the dominant discourse on the conflict produced and broadcasted by the mainstream mass media as  $\alpha$  quasi-color. It is generated and supported with a help of certain symbolic resources (Khrennikov 2016). Correspondently, an alternative discourse (not necessarily a counter-discourse) will be marked collectively as  $\beta$  quasi-color, accompanied by the related quasi-color.

Social laser theory suggests that intensification of the information radiation increases the probability of consistency between vector of input and output. This means that social atoms with higher probability would emit the same quasi-color they have consumed, which is  $\alpha$  quasi-color, paying primarily attention to symbols and labels without deep analysis of the message itself (“regime of scanning”) due to the overall information overload.  $\beta$  quasi-colored reactions are possible, but they will most likely be ignored by the surrounding and will not have any significant effect (Khrennikov 2016:16).

Support to the dominant discourse ( $\alpha$  quasi-color) prevails in the collected data. Facebook groups’ participants frequently reproduced media cliché and employed the related symbolism (flags, slogans, images). This tendency is especially pronounced in March, while in May the number of challenges to the established narrative increases. Scanning without deep reading frequently took place in March. As an example, in a Facebook discussion about an article on the military conflict published in *Expressen* at the end of the month many readers demonstrated unfamiliarity with the content reacting rather on article’s title and related images. In the following online exchanges, they repeated again and again the consumed media labels without attempts to apprise the information delivered to them or discuss it. Some people acknowledged that they do not have access to the article since it is available only for subscribers, however no one in the group responded with explanations on what the article is about. One attempt to trigger a discussion was detected in this thread. A participant problematized the media narrative and provided references to alternative sources, but this call was left unresponded. Overly, replies were mainly generated to support or reinforce the dominant discourse. Counter-arguments were rapidly dismissed and exchanges made no apparent difference in readers’ opinion. This is important, since quantum field that laid a foundation for explanation of social patterns in this study is a Bosonic field characterized by a specific facilitation effect: the more photons of the same quasi-color are in the gain medium, the higher probability is that yet another photon with same characteristics will be emitted (Khrennikov 2020). Behavior sciences identify this phenomenon as *bandwagon effect*: “People are not interested in the underlying rational

justification based on Boolean logic. They ‘hop on the bandwagon’ by taking into account only the number  $n$  of those who are already sitting on it” (Khrennikov 2020: 58). In the same manner, readers observing an overwhelming support to the dominant discourse most likely would emit yet another confirmative reaction.

### Coherence

One of the main objectives of echo-chambers is a generation of a coherent output. As appeared in the analyzed data coherence of output depends on the characteristics of mass media and the genre of the article. Thus, *Dagens Nyheter* (DN) has a rather homogeneous audience in terms of age, ethnic and social background, and commitment (the majority are paying for access to the content). Correspondently, the output produced is more predictable. On the other side *Expressen*'s heterogeneous readership demonstrates a wider variety of reactions. The majority of challengers on this page come from participants with non-Swedish (but not necessarily Slavic) names. As also noted, articles that focus on short presentations of a single event or a personality have more chances to generate consistent reactions than debate articles or articles with a focus on argumentation.

To illustrate the situation in March we selected articles of the similar type broadcasted in the three analyzed Facebook groups. In the transcripts below S stands for general support, Se – support with escalation, Sd – support with de-escalation, Pr – problematization, Ch – challenge, Pd – parallel discussion, h – charity request, sp – spam. The volume of verbal reactions of the same mode was presented with the help of superscript:  $^x=1-5$  reactions;  $^{2x}=6-10$ ;  $^{3x}=11-15$ . Subscript was used to represent the volume of second-level discussions  $_x=1-5$  reaction,  $_{2x}=6-10$ ;  $_{3x}=11-15$ ;  $_{4x}=16-20$ ;  $_{5x}=21-25$ ;  $_{6x}=26-30$ . We additionally marked deleted comments with subscript  $_a$  and specified appearance of challenges or problematizations in the second-level discussions, e.g.,  $_{2x(ch)}$ .

Extract 1: Transcript of Facebook threads posted in March 2022

*DN* (March 9): S-S $_x$ -S $^{3x}$ -Se $_{2x(Sd)}$ -S-S $_x$ -S $^{2x}$

*Aftonbladet* (March 8): S $^{5x}$ -S $_x$ -S $^{2x}$ -Se-S $^{4x}$

*Expressen* (March 14): S $_x$ -Pr $_x$ -Ch-S $_x$ -h-S $_x$ -S $_x$ -Ch-Pr $_x$ -S $_x$ -h-Se $_x$ -S $_x$ -Pr-S-sp-S $_x$ -sp-Se-S $_x$

As it is shown, support to the dominant discourse goes practically unquestioned in the threads generated at the *DN* and *Aftonbladet*' Facebook pages. General support (S) is interspersed with escalation efforts (Se). Second-level discussions are relatively rare and deal with de-escalation efforts or reassurance of the established discursive pattern. More often individuals' reactions appear like monologues or non-verbal emotional reactions. In distinction, reactions in the third thread are rather diversified with both support (S) and deviations of different types present (Ch, Pr). Challenges (Ch) in such threads might question the uniqueness of the conflict and the mainstream definition of its roots. They are not followed up by others. Several attempts to disrupt the exchanges or utilize for own ends appeared in a form of spamming (sp) and charity requests (h) respectively. We will turn to spamming in greater detail below.

The situation has gradually transformed over time towards a more visible presence of  $\beta$  quasi-color output. May 9 is celebrated in Russia as a Victory Day in the Great Patriotic War of 1940s. This seems to become a turning point when  $\beta$  quasi-color raised if not to a level a competitor to the dominant discourse, but a serious opponent.

Extract 2

*DN* (May 9): S $_x$ -Pr-S-Pr-Pr $_{2x}$ -Pr $_{2x(ch)}$ -Ch $_x$ -S $_x$ -S $_x$ -Pr-Ch $_{3x}$ -Pr-Pr $_x$ -S

*Aftonbladet* (May 9): S $_{3x(ch)}$ -S-S $_{3x(ch)}$ -S-S $_x$ -S-(Ch/Pr $_d$ ?) $_{2x}$ -S $_{3x(ch)}$ -S $_x$ -S $_x$ -S $_{2x(ch)}$ -S $_x$ -S $_{x(pr)}$ -Pr-S $^{3x}$ -Pr-Pr $_{2x}$ -S $^{2x}$ -Ch $_{2x}$ -S $^{2x}$ -Pr-S $_x$ -Ch-S-S $_{x(pr)}$ -Ch-S $^{2x}$ -Pr

*Expressen* (May 9): Ch $_x$ -S-S $_x$ -S-S $_{x(pr)}$ -S $_{2x(ch)}$ -S $_{x(pr)}$ -Ch $_x$ -S $_x$ -Ch $_{6x}$ -S $_x$ -Pr-S-S $_{x(pr)}$ -/Expressen-/Pr $_x$ -Pd-Ch $_x$ -Pr $_x$ -Ch $_x$ -S $_x$ -S $_{2x}$ -Ch $_x$ -S $_x$ -S $_{x(pr)}$ -Ch $_x$ -Pr-S-Pr $_{2x(pr)}$ /.../

Challenges (Ch) come in both first and second-level discussions, contesting the dominant narrative around the situation in Eastern Europe and its historical roots. Some of *Expressen*'s readers

do not hesitate to post symbols of the opposing side of the conflict. Facebook page moderators have to intervene on one occasion with a disciplining message (*Expressen*).

One of the central aspects in the dataset is management of deviants. At the beginning of March, participants are frequently surprised when someone voices an alternative opinion or experience. They are suspicious of ideological manipulations and make no additional efforts to understand distinctive arguments. Challengers are quickly attacked and disregarded: labeled as trolls, lacking knowledge, linguistic skills, and general understanding, or brainwashed. On several occasions, dissidents are *doxed*, frightened to be censored, deported out of Sweden, reported to the secret police, and to be fired from jobs. Even slight problematizations can become subject to ostracism during this period. Radical challenges in the first level are typically left without a verbal response.

The general tendency of mainstream discourse domination proceeds through April with a steady rise of both challenges and problematizations, especially on *Expressen*'s Facebook page. Here, apart from straightforward challenges other tactics to disrupt the coherence of output – spamming and bullying – have become increasingly visible. Spamming comes in different forms: dating, religious, cultural and commercial proposals, communication rituals and expression of unspecified emotions. Bullying presupposes making fun of statements considered to be serious. Let us take communication rituals (ex., greetings) to illustrate possible effects. Greetings or other forms of introduction sequences are primarily features of formal conversations. On social media platforms like Facebook people assume a conversation everlasting since all the comments remain on the website and can be accessed anytime (Meredith 2019). In this context greetings, especially in the middle or at the end of a thread, disrupt the logic of the conversation. These tactics should be seen as social noise, that, according to the Social Laser Theory (Khrennikov 2016), might lower the coherence of output. Apart from the general destruction of the communication flow, it might produce in the participants an understanding that these discussions are not serious and there is no reason to participate in the future.

Already in April challengers start to support one another and cooperate in defending themselves. May had become a turning point when dissidents behave more persistent and assertive. They question the established narrative, problematize calls for violence and even on one occasion try to silence active supporters of the dominant discourse. They actively refer to alternative sources of information, point out inconsistencies in the mainstream rhetoric and signal out repressions towards dissidents carried out on social media. They openly resort to the counter-discourse and use related symbolism. A more complex conversation structure with multilevel exchanges is notable during this period. Discussions are more common now, with longer argumentations and the readiness of participants to explore each other viewpoints. Comments are extended, contain detailed factual information and developed reasoning.

### *Technicalities*

Technicalities of social laser aim at improving the coherence of the beam; they include losses and (self)editing (Khrennikov 2016). In physical laser photons with a “non-authorized” vector are frequently absorbed by mirrors of the optical cavity or lost in other ways. Similarly, social energy with “wrong” quasi-color is typically wasted on social media: posts can be ignored by the readership, indirectly filtered, censored by peers, or by moderators (Khrennikov 2016: 18–19). As above discussed challenges frequently been compromised or remained unresponded in March; in this way their emotional charge got lost. It would further make them disadvantaged regarding a dynamic evolution system that increases the visibility of popular posts. Persistent censorship took place that might lead to the withdrawal of comments – self-directed or mandated. Missing comments are common in the discussions marked by  $\beta$  quasi-color. Some people confess that they hesitate to comment being afraid of Facebook sanctions. Self-editing is considered to be a form of “repair” when people attempt to manage troubles “before they arise” (Meredith 2019: 246). In distinction to the face-to-face conversation, social media correction on the different stages – after the comment was posted.

## Discussion and conclusion

Media and communication technologies are increasingly employed in contemporary geopolitics to produce desirable social political outcomes (Khrennikov 2016). This study introduced the Social laser theory to analyze social mobilization in Sweden around the ongoing military conflict in Eastern Europe. As demonstrated, social lasing has been employed as an instrument in information warfare. An “information tsunami” was generated by the Swedish national mass media at the outbreak of military events in March-May 2022. It shaped readers’ reactions to ensure support to a particular discourse. Social media functioned as related echo-chambers (social resonators) multiplying and refining the energy wave. We identified a close correspondence between the level of information radiation produced by mass media and social dynamics on social media platforms. This manifested in general level of energy emission, vector of output, coherence of the energy wave and technicalities. Additionally, analysis of readers’ exchanges on social media elicited the impact of the mass media characteristics and publication genres on the quality of lasing. It appeared that sustaining coherence of the information wave might be easier within culturally homogeneous readership and by means of emotionally-charged publications focused on single events or personalities. Similarly to homogeneity of the gain medium composed of physical atoms, the gain medium should be homogeneous, having the same social background.

Efforts to disrupt the effects of information radiation were registered in the analyzed dataset. Those efforts were heavily suppressed in the beginning of the information campaign, but the intensity of dissident actions increased when the information pressure subsided. At some point, production of information noise (spamming) turned to be a more effective opposition strategy than rational argumentation.

The quality of the available data did not allow for a full-scale testing of the Social laser theory in the current study. As earlier mentioned, missing data problem was characteristic in the analysis of social media (editing and self-editing) which restricted employment of quantitative methods. Further research is needed to confirm potentials and identify possible limitation of the Social laser theory in the research on social mobilization in the context of war and conflicts, with special attention to practicalities in managing process and effects of social lasing.

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