

Sharing Identity Information on Dark Web Drug Boards

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Abstract. This chapter uses Elfreda Chatman's concept of small worlds and Reijo Savolainen's concept of Way of Life to examine identity information sharing on a Finnish Dark Web drug trading image board. Based on a curated set of posts, it shows how people's identity information sharing on such anonymous fora often centres around issues of trust and safety. The chapter discovers that like other small world virtual communities, these too are of information poor environments, where some participants are seen as outsiders and some as insiders, based on factors such as age, ethnicity, and information sharing.

Introduction

This chapter examines the ways in which information practices take place on Dark Web image boards related to drug trading. The Dark Web is the visual part of the larger "darknet" or "dark net", a mostly non-indexed section of the World Wide Web that requires specially configured browser software, such as the Tor browser, to use [1]. Within the Dark Web, people can access spaces intended for e.g., whistleblower data dumps, support groups, hidden democracy movement discussions, the sharing of child exploitation images, and so forth [2]. Yet their most commonly known use is online drug trading. The most famous of these sites was the original Silk Road (2011-2013; see e.g., [3]), but many others have existed since. The Internet, particularly its Dark Web sections, has become an increasingly important channel for drug trading [4]. This is not, however, the whole picture, as for example social media platforms on the indexed Clear Web, and various instant messaging systems, are also utilized by some user segments for both drug trading and drug-related information sharing [5; 6; 7].

Drug trading sites on the Dark Web can be roughly divided into two types: cryptomarkets and image boards, which may in some cases overlap. On the former, people make mail-order purchases by using cryptocurrencies, while using usernames to hide their actual identities, and can leave seller

and/or buyer ratings [8; see also 9]. On the latter, they either state their purchasing needs, or what drugs they have available, and then set up face to face (f2f) sales via an instant messaging software such as Wickr or Telegram [10; 11; 12]. Image boards may sometimes also contain mail order sections, but that is not their primary function, and they may include discussion threads related to other crimes or the drug-using lifestyle (see [13] for examples). Likewise, some cryptomarkets have featured discussion forum like sections.

Traffic on both types of drug trading sites is pseudo-anonymous, due to the Tor (The Onion Router) technology. Originally developed for secure military communication, Onion Routing has expanded to various areas of clandestine interaction. Very roughly put, the core idea is that Tor traffic takes place in a manner in which layers of information are “peeled” at each step of the way, so that at most points only the preceding and the next router are known and can be traced (for technological details, see e.g., [14]). This does not, however, guarantee complete anonymity. If, for example, the police seize a drug trading site’s main server, or if someone owns enough computers in the volunteer network supporting Onion Routing, it is possible to track down individual users. People nevertheless use these sites, particularly cryptomarkets, because they think that making purchases on those is safer than f2f dealing, due to the possibility of supposed anonymity and the possibility to pay with e.g., Bitcoin [15; 16].

Because of the expected anonymity issues, our focus here in this chapter is especially on the sharing of personal information on drug-related Dark Web image boards (Internet forums that are based on initial image postings, but also contain discussions; for example, *4Chan*). On cryptomarkets, people may deal with physical mailing addresses, while trying to minimize the risk of detection [17]. On image boards, they can remain slightly more anonymous, but need to risk meeting a dealer or client (or a robber) face to face. They therefore prefer local trades by local partners, and can set several criteria (e.g., age, ethnicity) as pre-requisites for the meeting [12]. There is also the difference in that whereas cryptomarkets are typically business-to-business, i.e., sales for further distribution [18], image boards can include very minor sales [13]. On image boards, the traders post instant messaging service (in Finland, typically Wickr) usernames either in the seller’s advertisement, or as buyers under an advertisement, and then move further discussion to that

more secure platform. Wickr names, for instance, are unique and cannot be re-registered, but a user may have more than one such username [12]. A seller's reputation [19], community recommendations [20] and risk perceptions by all parties [21] therefore become the central elements for determining information sharing's source reliability. Here, we examine identity information issues (including doxing, the revelation of personal identity information without consent), as examples of information sharing on a local image board.

Methodology

Earlier research on Dark Web drug trading has focused on topics such as market availability [22], the technologies involved (e.g., [14]), or criminology [23]. For an information studies contribution, many of those discussions are relevant, but would be unnecessary forays in a book chapter like this. Some earlier points, despite from coming from very different disciplinary backgrounds, are however highly relevant here. For example, Nurmi, Kaskela, Perälä and Oksanen's [19] and Bakken and Demant's [21] work on seller reputations, Gehl's [1] book on Dark Web fora, and Childs et al.'s [24] research on "direct dealing", are all of interest to information scholars.

This area of information practices has so far been addressed mainly with three concepts: *disnormative information* [25], *Dark Knowledge* (Burnett & Lloyd, 2020), and *Dark Web authenticity* [1]. Here, we argue that these three concepts are interconnected. Access to disnormative information (information that may not be illegal, but goes against social norms or values) becomes a user's Dark Knowledge ("an epistemology that acknowledges both alternative knowledge and ways of knowing which are cognizant of the moral and ethical positioning of each" [26]). Having Dark Knowledge, in turn, makes users seem credible, reliable and in-the-know on drug-related discussion fora [5], and makes them authentic members of the community (as per [1]). Similar findings have been made already decades ago, in offline contexts (see e.g., [27]).

We approach this topic as a combination of the *everyday-life information seeking model* (ELIS) of Reijo Savolainen [28; 29], particularly the idea of a *Way of Life*, and the *small worlds* framework of Elfreda Chatman's [30; 31]. As with Chatman's observed communities of community outsiders

and female prisoners, here too people have a situation which sets them apart from the conventions and practices of the surrounding world, and as with Savolainen's *Way of Life*, building upon Bourdieu's [32; 33] concept of *habitus*, drug use may become a defining, internalized set of practices that affects everyday life, including the involved information practices (see [13]). People furthermore act as a type of efficiency community, when possible, by sharing useful information (as per [34]).

The data was gathered by using web scraping software. This is a contested approach, but also one considered amongst the most non-intrusive, alongside just lurking and observing, as far as Dark Web fora are concerned (e.g., [35; 36; see also 37 and 38] for especially important counterpoints). This aspect is very important when studying disnormative information, as the anonymous or pseudo-anonymous participants on these fora are often members of vulnerable populations. At the same time, the approach contains several potential problems, on especially software configuration and optimal query formation. For example, Dolliver [39] gathered data on the drug trading site *Silk Road 2*, but has faced severe critique on the accuracy of the material [40; 41; 42; see also [43]).

For ethical reasons, this chapter uses a curated sample of 175 forum posts out of a total data set of roughly 9300 on a Finnish drug trading image board. The reason for this selection was getting a randomized time period for data collection, and opted for a slice of what could be considered a "typical" amount of data on the site at a given time. As the site destroys all but the last 150 posts on each of its areas, this can be considered representative (see [13]).

Despite the board being image-based, only text was used, so as not to harm the subjects of the investigation. The posts were then screened from a set of threads and manually coded separately by both authors. Identity-related information was counted in direct, strong indirect, and indirect forms. For security reasons and GDPR compliance, all real names were removed from the data set before the analysis. Some indirect types of data were also excluded, as for example owning a driver's license, or having a credit rating, were alone insufficient as potential identifiers. Eventually, 25 accepted categories were identified, based on a second coding done by Hakalahti [44] (Table 1).

Accepted categories	Discarded categories
name gender age ethnicity identity address-related information shared Wickr usernames appearance and physical characteristics sexual orientation personal relationships and family profession and field of business car license plate numbers health and control over life a crime or the sentence of a crime other personal records	wealth and clean credit rating driver's license or driving skill status on the job market clean criminal records experience in growing or selling drugs experiences of using drugs other life experiences non-close relationships values, attitudes and opinions ideologies

Table 1. Data categorization.

The category "identity" contained for example the revelation of unreliable seller's identifying marks (but not a name), as well as posts stating that someone else was a troll. And since the image board in question contained location-based (e.g., "Helsinki") and content-based (e.g., "hormones") areas both, only posts that clearly stated that a person lived in an area were counted. Therefore, many posts of the type "*good speed available in Kallio. W: [Wickr username]*" went into the discarded category. (All quotes and categories here were translated from Finnish by Harviainen.)

Findings

Of the eventually curated 175 examined posts, taken from location-based areas and "work", 136 contained identity information sharing, 48 information needs relating to identity, and six relating to the selling of identity information. Some of these existed in the same posts and topics overlapped. Most commonly shared identifiers were gender (27.9%), age (21.3%) and ethnicity (19.1%). These too, at times, overlapped and therefore total percentages exceeded 100% (see Table 2). Seven categories of sharing motives were identified: 1) Demonstrating trust or

distrust, 2) employment and earning money, 3) trolling and provocation, 4) warning others about a person, 5) reaching a person, 6) selling and buying of narcotics, and 7) other motives.

Type of information shared	n	%
Gender	38	27.9
Age	29	21.3
Ethnicity	26	19.1
Wickr-username (for identifying someone or establishing trust)	21	15.4
Area or address	19	14.0
Other topics	14	10.3
Appearance and physical characteristics	10	7.4
Identity	9	6.6
Health and control over life	8	5.9
Name	6	4.4
Profession and field of business	5	3.7
Relationship and family	5	3.7
A crime or the sentence of a crime	4	2.9

Car license plate	4	2.9
Sexual orientation	3	2.2
TOTAL	136	149.1

Table 2. Shared information types.

The “work” thread proved an exception to the common sharing patterns, as people there advertised their skills, or sought employment. This is to be taken in the context that this was nevertheless a drug forum and therefore the work being sought or offered was mostly of the illegal kind, such as fraud, drug sales, or prostitution (which is legal in Finland, but profiting from someone else’s prostitution is not). Mentions of age and gender were there a typical format, regardless of type of job. For example, *“a twentysomething dude with credit rating still intact”*.

As noted by earlier research (e.g., [12], these forums are also actively racist. A statement of being a native Finn, and only dealing with other native Finns, was quite common. This, combined with ethnic stereotyping and vulgar racial slurs, indicates that some members of the community see ethnicity as a reliability factor usable for establishing trust. Certain ethnicities were considered as especially unreliable, while others, such as Swedes or Estonians got no mentions in warnings.

All this emphasizes the ways in which people on this anonymous site appeared to share information first and foremost for the purpose of establishing trust, or warning about those who in their opinion were not worthy of it. Nevertheless, in this sample, this directly appeared in just 36% of the 136 sharing posts. For example, Wickr usernames of others were mostly told for the sake of identifying treacherous individuals, for example: *“wickr username [Wickr username] – clearly a Rat”*. Likewise, address-related sharing followed the same principle: *“I’ve only lived in Turku for a short while, so I’m not known”* or *“Lives in Pähkinärinne, a total rat”*. Some of the posts implied knowledge of exact addresses of others, such as *“Cheater I luckily know where you live hahahaha ive followed you to your building door”*. An example of a complex message could be found here, containing both a work offer and the naming of an individual, plus the personal information of having a restraining order regarding the named individual:

"easy job, good pay!

Get from apartment X from person Y my laptop and phone. You will get paid at the same place, as also my stash is there! I'd gladly pay the slut a visit, but due to a R.order the end result is not nice."

An interesting case from the Other category included something very rare on the site: an email address. Given how this was in a post by two gym-going 16-year-olds offering debt collection services, this can be suspected a lack of experience. Since the post likewise could be trolling (14% of sharing posts were clearly identifiable as such), the motives are left unknown. Others identity details in the same category were a rare hobby and a religious conviction. Real names were rare, but doxing at times took place, as did threats of knowing some username's real identity.

Family situation sharing typically included a mention of one's spouse, and thus like some work applications formed somewhat of an exception to the idea of sharing for trust, but the category also contained some cases where for example a "known rat's" wife was named. Sexual orientation was mentioned both by people looking for company or customers, and as a slur on members of minorities.

Marketing identity information for money was rare, but took place, for example:

"For sale two [ethnic slur] rats. One is about 185cm really thin and the other 170cm maybe 16years and 20years. These [ethnic slur] have been ratting on the board already for a long time. I will sell this both 200e."

This type of sharing serves both the financial interests of the sharer, but also functions as community policing within a disnormative small world. People who had been, in turn, cheated in deals sometimes posted their information needs, promising payment in return for finding the offending party. In those cases, they too would often share the Wickr names, as a form of warning.

Users shared much more information about others (61% of posts, than of themselves (41.2%). This is understandable, given the way people on the site want to protect their own identities.

Discussion

The data shows clear signs of information poverty (as per [30]), but not a completely small world situation, in which people involved in the drug subculture would reject certain information sources (as per [45, pp. 31]). On the contrary, participants on image boards like this appear to take pride in their "outlaw" status, same as some of Becker's [27] informants did. This reflects the ways in which drug use has become a Way of Life for many (as per [28; see also [13]). Nevertheless, the social norms of the community (as per [45]; see also [46]) define many of the information practices on the forum. This is particularly interesting since in many ways, disnormative information effectively becomes the community's normative information, reflecting several points from Haasio [25], Burnett and Lloyd [26] and Gehl [1].

As Chatman [45] pointed out, a small world is not only a limitation on what kind of information is welcome, it is also the favouring of certain familiar ("insider") sources over others. It would be easy to claim that this is the avoidance of cognitive dissonance (as per [47]) by avoiding conflicting information, but we believe that this explanation is insufficient. The Way of Life of these drug users makes them, as Chatman [45] noted, use their everyday experiences and common wisdom as the baseline for evaluating what information is accepted and what is possibly appended to existing knowledge structures. On this particular board, ethnicity, age and showing expertise in how one trades and for how often one uses drugs (see [12]) determines who gets to be one of the respected insiders.

Conclusions

Members of this community both help and protect one another, but also fear and distrust each other at the same time. The analysed posts implied this tension, and earlier research suggests that they navigate this borderline constantly, especially if they are daily users of drugs. The site's anonymity makes identity information sharing a powerful tool in many cases, but it may in for example the case of minors lead to their ostracism from the rest of the community. The way in which the practices on the site reflect a small world point towards a shared core understanding of

the common Way of Life, yet also point towards people recognizing individual-level differences in habitus, and trustworthiness of that habitus.

In sharing information, the users of the image board are also showing a sense of a disnormative community, where Dark Knowledge, especially on who can be trusted and who cannot, grants status and may also lead to better deals for the individual in-the-know. Many of the users will, despite setting up face to face deals via Wickr, never know most of the other community members behind the numerous Wickr usernames. This is, as Gehl [1] points out, a core part of the ideology of the Dark Web. The identity information sharing, while seemingly altruistic, in fact protects also the sharer in the long run, as long as it is not too common.

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References

- [1] Gehl, R. W. (2018). *Weaving the Dark Web: Legitimacy on Freenet, Tor, and I2P*. MIT Press, Cambridge, MA.
- [2] Moore, D. & Rid, T. (2016). Cryptopolitik and the Darknet. *Survival*, 58(1), 7–38.
- [3] Barratt, M. J. (2012). Silk Road: Ebay for drugs. *Addiction*, 107(3), 683–684.
- [4] Norbutas, L. (2018). Offline constraints in online drug marketplaces: An exploratory analysis of a cryptomarket trade network. *International Journal of Drug Policy*, 56, 92-100.
- [5] Bilgri, O. R. (2018). Broscience. Creating trust in online drug communities. *New Media & Society*, 20(8), 2712–2727.
- [6] Demant, J., Bakken, S. A., Oksanen, A., & Gunnlaugsson, H. (2019). Drug dealing on Facebook, Snapchat and Instagram: A qualitative

analysis of novel drug markets in the Nordic countries. *Drug and alcohol review*, 38(4), 377-385.

- [7] Oksanen, A., B.L. Miller, I. Savolainen, A. Sirola, J. Demant, M. Kaakinen, and I. Zych, "Illicit Drug Purchases via Social Media Among American Young People", in Meiselwitz, G. (ed.), *Social Computing and Social Media. Design, Ethics, User Behavior, and Social Network Analysis*, Springer, New York, NY, 2020, pp. 278-288.
- [8] Martin, J., Munksgaard, R., Coomber, R., Demant, J., & Barratt, M. J. (2020). Selling drugs on darkweb cryptomarkets: Differentiated pathways, risks and rewards. *The British Journal of Criminology*, 60(3), 559-578.
- [9] Hämäläinen, L. (2015). User names of illegal drug vendors on a darknet cryptomarket. *Onoma*, 50, 43-68.
- [10] Buxton, J., & Bingham, T. (2015). The rise and challenge of dark net drug markets. *Policy brief*, 7, 1-24.
- [11] Moyle, L., Childs, A., Coomber, R., & Barratt, M. J. (2019). #Drugsforsale: An exploration of the use of social media and encrypted messaging apps to supply and access drugs. *International Journal of Drug Policy*, 63, 101–110.
- [12] Harviainen, J. T., Haasio, A., & Hämäläinen, L. (2020). Drug traders on a local Dark Web marketplace. In: *AcademicMindtrek '20: Proceedings of the 23rd International Conference on Academic Mindtrek January 2020* (pp. 20-26). New York, NY: ACM.
- [13] Haasio, A., Harviainen, J. T., & Savolainen, R. (2020). Information needs of drug users on a local dark Web marketplace. *Information Processing & Management*, 57(2), 102080.
- [14] Nurmi, J. (2019). *Understanding the usage of anonymous onion services* (Doctoral dissertation, Ph. D. Dissertation. Tampere University, Tampere, Finland).
- [15] Foley, S., Karlsen, J. R., & Putniņš, T. J. (2019). Sex, drugs, and bitcoin: How much illegal activity is financed through cryptocurrencies?. *The Review of Financial Studies*, 32(5), 1798-1853.

- [16]Grimani, A. Gavine, A. and W. Moncur. (2020) "An Evidence Synthesis of Strategies, Enablers and Barriers for Keeping Secrets Online Regarding the Procurement and Supply of Illicit Drugs", *International Journal of Drug Policy*, 75.
- [17]Aldridge, J., & Askew, R. (2017). Delivery dilemmas: How drug cryptomarket users identify and seek to reduce their risk of detection by law enforcement. *International Journal of Drug Policy*, 41, 101–109.
- [18]Aldridge, J. & Décary-Hétu, D. (2014). Not an 'eBay for drugs': The Cryptomarket "Silk road" as a Paradigm Shifting Criminal Innovation.
- [19]Nurmi, J., Kaskela, T., Perälä, J., & Oksanen, A. (2017). Seller's reputation and capacity on the illicit drug markets: 11-month study on the Finnish version of the Silk Road. *Drug and alcohol dependence*, 178, 201-207.
- [20]Lorenzo-Dus, N. & Di Cristofaro, M. 2018. 'I know this whole market is based on the trust you put in me and I don't take that lightly': Trust, community and discourse in crypto-drug markets. *Discourse & Communication*, 12(6), 608–626.
- [21]Bakken, S.A. and J.J. Demant. (2019) "Sellers' Risk Perceptions in Public and Private Social Media Drug Markets", *International Journal of Drug Policy*, 73.
- [22]Scourfield, A., Flick, C., Ross, J., Wood, D. M., Thurtle, N., Stellmach, D., & Dargan, P. I. (2019). Synthetic cannabinoid availability on darknet drug markets—changes during 2016–2017. *Toxicology Communications*, 3(1), 7-15.
- [23]Duxbury, S. W. & Haynie, D. L. 2018. The Network Structure of Opioid Distribution on a Darknet Cryptomarket. *Journal of Quantitative Criminology* 34, 921–941.
- [24]Childs, A., Coomber, R., Bull, M., & Barratt, M. J. (2020). Evolving and Diversifying Selling Practices on Drug Cryptomarkets: An Exploration of Off-Platform "Direct Dealing". *Journal of Drug Issues*, 50(2), 173-190.

- [25] Haasio, A. (2019). What is Disnormative Information? *Information and Communication Sciences Research*, 23(1), 9-16.
- [26] Burnett, S. & Lloyd, A. 2020. Hidden and forbidden: conceptualising Dark Knowledge. *Journal of Documentation*. DOI 10.1108/JD-12-2019-0234
- [27] Becker, H.S. (1963). *Outsiders: Studies in the Sociology of Deviance*. New York, NY: MacMillan.
- [28] Savolainen, R. (1995). Everyday life information seeking: approaching information seeking in the context of way of life. *Library & Information Science Research*, 17(3), 259-294.
- [29] Savolainen, R. (2008). *Everyday information practices. A social phenomenological perspective*. Lanham, MD: Scarecrow Press.
- [30] Chatman, E.A. (1996). The impoverished life-world of outsiders. *Journal of the American Society for Information Science*, 47(3), 193-206.
- [31] Chatman, E.A. (1999). A theory of life in the round. *Journal of the American Society for Information Science*, 50(3), 207-217.
- [32] Bourdieu, P. 1979. *La distinction*. Les éditions de Minuit, Paris.
- [33] Bourdieu, P. 1990. *The Logic of Practice*. Polity, Cambridge.
- [34] Sonnenwald, D. H. 2006. Challenges in sharing information effectively: examples from command and control. *Information research* 2006 11(4).
- [35] Christin, N. (2013). Traveling the Silk Road: A Measurement Analysis of a Large Anonymous Online Marketplace", *Proceedings of the 22nd World Wide Web Conference (WWW'13), Rio de Janeiro, Brazil, 2013*, pp. 213-224.
- [36] Martin, J. and N. Christin, "Ethics in Cryptomarket Research", *International Journal of Drug Policy*, 35, 2016, pp. 84–91.
- [37] Ferguson, R.-H. (2017). "Offline 'Stranger' and Online Lurker: Methods for an Ethnography of Illicit Transactions on the Darknet", *Qualitative Research*, 17(6), pp. 683–698.

- [38]Kaufmann, R. and M. Tzanetakis (2020). Doing Internet Research with Hard-to-reach Communities: Methodological Reflections on Gaining Meaningful Access. *Qualitative Research, OnlineFirst*.
- [39]Dolliver, D. S. (2015a). Evaluating drug trafficking on the Tor Network: Silk Road 2, the sequel. *International Journal of Drug Policy*, 26(11), 1113-1123.
- [40]Aldridge, J. and D. Décary-Hétu (2015). "A Response to Dolliver's 'Evaluating Drug Trafficking on the Tor Network: Silk Road 2, the Sequel'", *International Journal of Drug Policy*, 26, 2015, pp. 1124–1125.
- [41]Van Buskirk, J., A. Roxburgh, S. Naicker, and L. Burns (2015). "A Response to Dolliver's 'Evaluating Drug Trafficking on the Tor Network'", *International Journal of Drug Policy* 26, 2015, pp. 1126–1127.
- [42]Munksgaard, R., J. Demant, and G. Branwen (2016). "A Replication and Methodological Critique of the Study 'Evaluating drug trafficking on the Tor Network'", *International Journal of Drug Policy*, 35, 2016, 92–96.
- [43]Dolliver, D. S. (2015b). "A Rejoinder to Authors: Data Collection on Tor", *International Journal of Drug Policy*, 26, 2015, pp. 1128–1129.
- [44]Hakalahti, M. (2019). Identiteettiin liittyvän tiedon jakaminen ja tiedontarpeet tor-verkon Sipulitorilla. MA thesis, Tampere University.
- [45]Chatman, E. A. (1991). Life in a small world. Applicability of gratification theory to information-seeking behavior. *Journal of the American Society for Information Science* 42(6), 438–449.
- [46]Burnett, Gary; Besant, Michele; Chatman, Elfreda A. Small worlds: Normative behavior in virtual communities and feminist bookselling. *Journal of the American Society for Information Science and Technology* Vol. 52, Iss. 7, (May 2001): 536-547.
- [47]Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.

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