

# From alienation to relation: Modes of production in crowd work

Karin Hansson  
Stockholm University, Stockholm, Sweden  
*khansson@dsv.su.se*

Tanja Aitamurto  
Stanford University, Stanford, CA, USA  
*tanjaa@stanford.edu*

Thomas Ludwig  
University of Siegen, Siegen, Germany  
*thomas.ludwig@uni-siegen.de*

Michael Muller  
IBM Research  
*michael\_muller@us.ibm.com*

**Abstract.** While crowdsourcing has proved to be a useful method in several contexts, the power relations in crowdsourced processes remain largely unexamined. For designing better crowdsourcing technologies and processes, it is important to understand those power structures and relations within the crowd itself as well as between the participants: who has the power, what is being produced through crowdsourcing and how. Therefore in this paper we develop a typology of participation in crowdsourcing by examining crowdsourcing tools framed by Marx theory of alienation. We show how these types of crowd work can be described as levels of alienation where the worker, the consumer, their relations, and products are connected in modes of production representing different ontologies.

# 1 Introduction

Crowdsourcing and especially crowd work enables a division of labor on an unprecedented scale, which often drastically reduced the individual's ability to monitor and control the results of her own work. We therefore suggest that crowdsourcing platforms exemplify Marx's theory of alienation, which was central to his analysis of capitalism. Crowdsourcing settings like those in Amazon Mechanical Turk (ATM) have striking power differences between the crowd of workers and the "sourcers" (Felstinerf, 2011; Silberman, Ross, Irani, & Tomlinson, 2010), which also has resulted in collective action by crowd workers (Salehi et al., 2015). Lack of transparency and an asymmetry in the information access were also shown in Gupta et al's (2014) study of workers at the Amazon Mechanical Turk as well as by shown by Ludwig et al. (2016) in mobile contextual studies. Digital literacy and infrastructure are other aspects of participation that can affect crowd workers' ability to control their work. Other ways to control crowd work are enforced by the rules, the technical system (Irani & Silberman, 2013), and the economic means (Bederson & Quinn, 2011). However, the technologies facilitating crowdsourcing initiatives also enable stronger communities and direct relations between consumer and producer. Parts of today's network-based creative economy are characterized by the humanistic values, that scholars claim Marx was looking for when he formulated the theory of alienation (Michael Hardt & Negri, 2000). For instance, Hardt and Negri (2000) argue that the new economy of affective labor and networked relations amounted to 'a kind of spontaneous and elementary communism.'

The tensions between on one hand an extreme alienation due to the division of labor in micro tasks enabled by crowdsourcing tools, and the humanistic values in peer-produced commons (Benkler, 2002) have also gained attentions from Marx scholars (Scholz, 2013). Media and communication scholars have used Marxist terminology to examine social networking sites more closely (Beverungen, Bohm, & Land, 2015).

Especially the definition of productive work in social media has been problematized, whether this should be consider free communication or a valorized social labor (Beverungen et al., 2015; Dean, 2005; Scholz, 2010; Stacey, 2008). Exploitation of workers in crowdsourcing is another theme where Marx theories have been used (Busarovs, 2013; Fuchs, 2014). However, there is a lack of a more structured analysis of crowdsourcing and commons-based peer production that focus on power relations from this perspective. Therefore in this position-paper we applied Marx theory of alienation to analyze a select number of platforms for crowd work to create a lens for understanding the particularities of different crowdsourcing contexts.

## 2 Marx theory of alienation

The capitalist system Marx described when formulating his theories was based on nineteenth-century industrial capitalist society. Marx (1844) argued that industry capitalism created alienation in society that operated on several levels:

- *Alienation between the producer and the consumer.* Instead of producing something for another person, the worker produces for a wage.
- *Alienation between the producer and the product of the work.* As the production is split into smaller parts and the worker becomes an instrument that makes a limited part of the whole, the pride and satisfaction of work is lost.
- *Alienation of workers from themselves,* since they are denied their identity. By losing control over the product of work and thus pride in labor, the worker is deprived of the right to be a subject with agency.
- *Alienation of the worker from other workers,* through the competition for wages, instead of working together for a common purpose.

A capitalist society, divided into classes of bourgeoisie and proletariat, stands in contrast to the ideal of communist society where there is no need for the state and class differentiation; instead everyone owns the means of production, and the principle of distribution is famously:

“From each according to his ability, to each according to his need.”(Karl Marx, 1875)

This has often been interpreted to mean that everything should be shared equally, but Marx says nothing about equality, rather he emphasizes the relationships between people and their abilities to contribute to production and society. A ‘communist society’ is a society where everyone is linked in a mutual interdependency with others and nature, and self-actualization is the driving force. In this perspective, production is a mutual exchange that strengthens individuals. The producers are strengthened by expressing themselves through their work, where the product is an expression of their subject and position in the world, and thus expands their power and range. As this expression of their identity is put into use, and used by other individuals, the producers also get the satisfaction of seeing their products in use, as a response to other people's human needs.

When considering modern crowdsourcing applications that are designed for “participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals via a flexible open call, the voluntary undertaking of a task” (Estelles-Arolas & Gonzalez-Ladron-de-Guevara, 2012), on the one hand, those technologies can further alienate people as the social production of data becomes commodified (see eg. the discussion about

communicative capitalism by Dean, 2005), but on the other hand they can also bring about the possibility of reducing the alienation between producer and consumer in certain areas of production by establishing direct links without any tangible intermediary (e.g. Wikipedia), and thus provide tools that destabilize capitalism (Stacey, 2008). Those applications can be seen as an expression of the talent of the producer and the needs of the consumer, but also as an act of recognition between humans, that is, a social relationship. To translate this into Marx's terminology, instead of alienation, stronger relationships are created:

- The relationships between the producer and the consumer. Instead of producing work for a wage, a direct relation to another person is developed.
- The relationship between the producer and the product of the work. As the product and the producer is the same person, and the producer has total control over her own work and can feel proud of this work.
- The relationship with herself. When production is mainly about expressing oneself and creating one's own community of followers, the worker is no longer a stranger to herself.
- Relationships between workers. By not competing for the salary, but working together for the common network that everyone depends on, relationships are strengthened.

In this perspective no one can own anyone else's work, or even their own work, as their own subject is dependent on all the others, and cannot therefore exist outside of this relationship.

### 3 Analysis framework

To identify a range of typologies useful for identifying relations, we have analyzed crowdsourcing platforms, focusing on how these tools support the relations in the crowd production. These roles can be clearly divided, as in the working relations on a crowdworking platform such as the AMT, or they can be the same as in a collaboratively developed Wikipedia post, where the consumer also can be the worker.

We start with a very broad definition of a crowdsourcing tool as an *ICT enabled, often large scale, collaborative production*. To enable a comparison of some crowdsourcing platforms from a participatory perspective, we started with fundamental questions focusing on worker and owner positions, description of the outcome of the work what we chose to call products, and how community is supported. The analysis addresses the following questions regarding relationships:

- Between the producer and the consumer: Is it a separation between the worker collecting the data and the consumer of the data, or do they know each other?

- Between the worker and the product: What is the underlying ontology? Is the result described as bits and pieces, a discussion, or an expression by a subject?
- Within workers; worker identity: Is the crowd worker an object that provides data without much control, or an active subject?
- Between workers: What is the available tool support for community? Does the interface express certain group awareness? Can workers communicate shared interests or establish a community?

We then adjusted these definitions to better mirror the practices in the cases and to develop typologies grounded in the empirical contexts. We have in this pilot study analyzed six cases that were chosen because they represent a diversity of crowdsourcing tools and contexts:

1. In OpenStreetMap (OSM) participants contribute to the development of an online map and also to the development of the mapping tool.
2. In Waze participants contribute to a real-time navigation application with traffic information collected through their mobile devices, active sharing of traffic situations and also to the development of the map by editing e.g. roads and houses.
3. In the citizen science framework PartS participants contribute by capturing data with their mobile devices during long time studies.
4. In the case of crowdsourced law reforms in Finland participants were invited to contribute with their knowledge on law reforms about off-road traffic and housing company management.
5. In the case of Råntekartan (mortgage interest rate map) journalists used a crowdmap on leading daily newspaper's website to crowdsource mortgage interest rates in Sweden. The information is displayed on the crowdmap, and the journalists published dozens of news articles based on the crowdsourced data.
6. In Amazon Mechanical Turk, participants are in fact part of a crowdsourced labor market, create knowledge, produce data, solve problems as well as act as test subjects in crowdsourcers' projects (for instance, for behavioral studies).

## 4 Preliminary result

Most of the aforementioned tools provided multiple types of worker positions. When we compare the different types of information that are produced by these means of production, we identify different ways of looking at the data and the production process. In the case of driving around with a mobile device producing GPS coordinates, the facts are rather simple and undeniable. Anyone with the same device could get similar data driving the same way. On the other hand, also

geo-mapping tools like OSM need a diversity of users to cover the map collecting multiple facts from different locations and experiences.

On one level worker's identity can be seen as a mere passive object whose movement or surrounding becomes recorded with geo-mapping or sensing functionalities, while moving or driving around. On another hand users also create legitimacy: The more contributors or participants in data collection, the more trustworthiness is created for the result. Users can also contribute more actively with data, like in the citizen science project PartS, where users not only provide with sensor data, but also acts like instruments contributing information via questionnaires, or like in the case of *Räntekartan*, where journalists crowdsourced mortgage interest rate information from over 50,000 participants. In Waze the constraints to what the user actually can do are also precise. The aim is to improve a map and there is a toolbox of shapes and categories to add on. The participant is an instrument that submit/develop documents. However, within these constraints the participant is seen as an actor with expertise about a certain area and that is the expert that controls the quality of the map. In the case of crowdsourced off-road traffic law and limited liability housing company law in Finland the workers/contributors can for example be instruments that provide information for a better policy: writing down their knowledge about the issue by addressing the prompt on the crowdsourcing platform.

The constraints are, however, not always absolute, but something that can be negotiated and developed in a process. The instrument can also be an active subject that communicates and co-produce the process with others on the platform, including peer-producers and crowdsourcers such as civil servants in crowdsourced law-reforms. Likewise, the development of OSM takes place in discussion forums and conferences. Also within the application every edit is negotiated in comment functionality. In the PartS tool, participants are also consumers, having the option to create empirical studies by their own, which capture as well as analyze mobile device data, thus taking the role of owner/researcher controlling the process.

The relation between the worker and the consumer varied a lot in the analyzed cases. One position was to not provide any mean of communication or information about users, like in the citizen science project where this was avoided for ethical reasons. In AMT, users are seen as competitors, and the tool a market mechanism that distributes the work provided by a client. Another position is that communication means are not provided, but users reputation is known, and users might participate due to a common denominator. In PartS the researcher can also communicate directly and anonymously with the contributors. Other tools put a lot of effort into developing bonds between workers, and workers and consumers. In Waze, in addition to the map there are a discussion forums that provides support to a large community of Waze workers, and it also enables Waze users to

bond with users in other social networks. Workers have a public profile that shows their activity on the discussion forum.

On the actually map it is all about helping strangers, and thus to contribute to an abstract community.

In Waze, even though anyone can contribute to the map, there is an idea that people with real experience of a site are more experts than others. The products of the work can best be described as reports and edits, where the editing is a potentially deliberative dialogue with everyone else that contributed to the post. In the case of the crowdsourced law reforms the production of data takes place in idea and comment submissions and in the dialogues and negotiations that develop knowledge about the consequences of the law reforms. In these deliberative

Mode of production	Worker – consumer	Worker – products	Worker identity	Worker – worker
Crowd capitalizing	Separation	Bits and pieces	Passive object	Alienation
Crowd instrumentalizing	Reputation	Contributions	Instrument	Common denominators
Crowd deliberation	Recognition	Dialogues	Expert	Public
Relational crowd	Bond	Agenda	Subject with agency	Community

Table 1 **Worker relations with corresponding modes of productions**

processes transparency is important, the OSM for example describe every edit in history and any conflicts are handled after an open protocol. In PartS secrecy is instead essential for participation.

These different relations to the consumer, product, self and other workers, can be described as different ontologies or modes of productions. From an idea of *crowd capitalizing* where the worker as a random *passive* object from which a bits and pieces are sourced, to *crowd instrumentalization* where the crowd provides data from multiple realities, to *crowd deliberation*, to a performed reality of the *relational crowd* where the worker is the consumer and the owner of the means of production, and the product is an expression of self identity. Table 1 summarizes these relations with corresponding modes of productions.

## 5 Conclusion

In this position paper, we are examining the role of the crowd workers, the crowd work consumers, the nature of their relations, and the crowd-produced product, using Marx theory of alienation, to identify a vocabulary to express types of participation in crowdsourcing.

We suggest that these types of participation can be described as different levels of alienation where the worker, the consumer, their relations, and products are connected in four modes of production:

- **Crowd capitalizing:** A functional mode of participation, where the participant is viewed as a random object, that provides facts and lend legitimacy to the process. There are no channels of communication.
- **Crowd instrumentalizing:** In this more instrumental mode of participation, production is enabled by the tool, where participants are instruments that make contributions for a certain cause. The individual is aware of the crowd.
- **Crowd deliberation:** In a more consultative mode of participation, participants are viewed as experts and participation is a way to get in tune with public views and values, garner good ideas, and develop consensus through deliberative dialogues. The individual has a communication channel to the group, be it a newspaper, a mailing list or similar forum that makes communication with the group possible.
- **Relational crowd:** In a more performative transformative mode, participants are both producers and consumers, as well as owner of the means of production, peers that co-produces new theories and have political capabilities. The community is mediated in a public sphere and participants are connected in mutual relations.

These different modes are, as our cases show, not mutually exclusive, but co-exist within the same tools and processes. However, these concepts express different aspects of participation. In our ongoing work, we will expand the case base to more realms and develop our model further, to identify similarities and differences between contexts. We will also examine the impact of the crowdsourced production modes for democratic ideals, such as transparency, inclusiveness and accountability.

## 6 References

[1] Bederson, B. B., & Quinn, A. J. (2011). Web Workers Unite ! Addressing Challenges of Online Laborers. *Human Factors*, 97–105. doi:10.1145/1979742.1979606

[2] Benkler, Y. (2002). Coase’s Penguin, or, Linux and The Nature of the Firm. *Yale Law Journal*, 112(3).

[3] Beverungen, A., Bohm, S., & Land, C. (2015). Free Labour, Social Media, Management: Challenging Marxist Organization Studies. *Organization Studies*, 36(4), 473–489. doi:10.1177/0170840614561568

[4] Busarovs, A. (2013). Ethical Aspects of Crowdsourcing , or is it a Modern Form of Exploitation. *International Journal of Economics & Business Administration*, 1(1), 3–14.

[5] Dean, J. (2005). Communicative Capitalism: Circulation and the Foreclosure of Politics. *Cultural Politics*, 1(1), 51–74. doi:10.2752/174321905778054845

[6] Estelles-Arolas, E., & Gonzalez-Ladron-de-Guevara, F. (2012). Towards an integrated crowdsourcing definition. *Journal of Information Science*, 38(2), 189–200. doi:10.1177/0165551500000000

[7] Felstinerf, A. (2011). Working the Crowd : Employment and Labor Law in the Crowdsourcing Industry. *Berkeley Journal of Employment & Labor Law*, 32(1), 143–204.

[8] Fuchs, C. (2014). Against Divisiveness Digital Workers of the World Unite! A Rejoinder to César Bolaño. *Television & New Media*, 1527476414528053. doi:10.1177/1527476414528053

[9] Hardt, M., & Negri, A. (2000). *Empire*. Cambridge, Mass.: Harvard University Press.

[10] Hardt, M., & Negri, A. (2009). *Empire. Vasa*. Cambridge, Mass. London: Harvard University Press.

[11] Irani, L., & Silberman, M. (2013). Turkopticon: Interrupting worker invisibility in amazon mechanical turk. *Proceedings of the SIGCHI Conference on ...*, 611–620. doi:10.1145/2470654.2470742

[12] Karl Marx. (1844). Comments on James Mill. Retrieved December 24, 2012, from <http://www.marxists.org/archive/marx/works/1844/james-mill/>

[13] Karl Marx. (1875). Critique of the Gotha Programme. *Marx/Engels Selected Works, Volume Three*. Retrieved December 26, 2012, from <http://www.marxists.org/archive/marx/works/1875/gotha/>

[14] Ludwig, T., Dax, J., Pipek, V., & Randall, D. (2016). Work or Leisure? Designing a User-Centered Approach for Researching Activity “in the Wild.” *Journal of Personal and Ubiquitous Computing*.

[15] Salehi, N., Irani, L. C., Bernstein, M. S., Alkhatib, A., Ogbe, E., & Milland, K. (2015). We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems - CHI '15* (pp. 1621–1630). New York, New York, USA: ACM Press. doi:10.1145/2702123.2702508

[16] Scholz, T. (2010). Facebook as playground and factory. In *Facebook and philosophy* (pp. 241–252).

[17] Scholz, T. (Ed.). (2013). *Digital labor : the Internet as playground and factory*. New York: Routledge.

[18] Silberman, M. S., Ross, J., Irani, L., & Tomlinson, B. (2010). Sellers' problems in human computation markets. In *Proceedings of the ACM SIGKDD Workshop on Human Computation - HCOMP '10* (p. 18). New York, New York, USA: ACM Press. doi:10.1145/1837885.1837891

[19] Stacey, P. (2008). "Wikivism": From Communicative Capitalism to Organized Networks. *Cultural Politics: An International Journal*, 4(1), 73–99. doi:10.2752/175174308X266406