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1. Introduction

This paper investigates global IT outsourcing and the structural bond between outsourcing and crowdsourcing. Gamification is an issue here, however, not games. Since the world economy has witnessed the rise of global supply chains, outsourcing multiple functions to third-party suppliers has become a common practice—defined pervasive for their business by major corporations, such as Nike (Tsing 2009, p.148)—in the production cycle of many goods and services. Within this widespread process of corporate decentralization, the increasing reliance of capitalist industry on information technology has, furthermore, prompted the growing importance of the IT outsourcing sector: it is estimated that the “global IT outsourcing (ITO) market has increased each year since 1989, when global ITO was only a US \$10 billion market. On conservative estimates, by the end of 2014 it exceeded US \$700 billion” (Oshri et al. 2015, p.1). ITO has, indeed, “become a top priority topic on executives’ agendas since the 1970s” (Weinert and Meyer 2005:1).

In recent years, following the spread and multiplication of online networks, new opportunities for ITO emerged. A particularly outstanding one—insofar it most likely will “increasingly cannibalize work currently conducted by traditional outsourcing firms” (Kuek et al. 2015, p.10)—is that of paid crowdsourcing platforms such as Amazon Mechanical Turk, Figure Eight, Freelancer, Upwork, to mention only few—and yet relevant—examples. The category of crowdsourcing, at the beginning basically intended as descriptive of a new form of corporate online outsourcing, has been employed in recent years to qualify a very heterogeneous whole of phenomena involving the participation of the crowd online, as I will outline in the next section. However, paid crowdsourcing platforms remain consistent with the original definition of the category proposed by Jeff Howe (2006a, 2006b), who suggested the existence of a structural bond between outsourcing and crowdsourcing. What is especially peculiar to these platforms is both the aim to support corporate outsourcing processes and the focus on tasks normally related to the IT sector, such as data processing, content creation, content verification and so forth.

Paid crowdsourcing platforms are, in turn, distinguished in two more typologies: microwork platforms—such as Amazon Mechanical Turk and Figure Eight—and online freelancing platforms—such as Upwork. The first group involves processes in which “projects and tasks are broken down into microtasks that can be completed in seconds or minutes” and “require basic numeracy and literacy skills”, while the second, within which “clients contract professional services to distributed third-party workers”, requires a “higher level of expertise than microwork, with workers typically possessing technical or professional skills” (Kuek et al. 2015, p.1). In this paper, I will focus exclusively on the analysis of microwork platforms, in particular through the case of Amazon Mechanical Turk (from now on AMT).

As long as the main purpose for people to participate in these platforms is to earn money—whether this revenue represents for them just an integration to their otherwise earned wage or their primary source of income—it is anyway clear that, to a certain degree, users are more likely to get involved in microwork tasks as long as they find them interesting or funny. A higher factor of attractiveness could therefore be reached, for platforms like AMT, through processes of gamification, which represent an utterly motivational factor for users to engage in microwork, able to lead to “better accuracy and lower costs than conventional approaches that use only monetary incentives” (Feyisetan et al. 2015, p.333). To assess the importance of gamification in microwork is therefore, from my perspective, a useful way—yet not so much developed—to further deepen our understanding of the phenomenon of crowdsourcing in general.

This paper is organized in five sections. In section 2, I will discuss some features regarding the category of crowdsourcing. In section 3, I will focus on the analysis of AMT. In section 4, I will suggest how gamification could affect participation in AMT. Finally, in section 5, I will draw some conclusions on the relation between paid crowdsourcing and gamification.

2. Crowdsourcing

In his article *The Rise of Crowdsourcing* (Howe 2006a), Jeff Howe employed for the first time the word crowdsourcing, which has subsequently acquired a considerable popularity. Howe defined the term, in a following essay, as “the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” (Howe 2006b), remarking that, for platforms like iStockphoto or AMT, “now it doesn't matter where the laborers are—they might be down the block, they might be in Indonesia—as long as they are connected to the network”, and that “labor isn't always free, but it costs a lot less than paying traditional employees. It's not outsourcing; it's crowdsourcing” (Howe 2006a). However, since its first appearance, the concept has undergone major variations through following manipulations, coming also to include “new media examples that structurally had nothing to do with crowdsourcing—such as Wikipedia, YouTube, Flickr, SecondLife, open-source software, and blogs” (Brabham 2013, p.xviii). Sometimes, the original statements of Howe have been even clearly misunderstood; for instance, when he wrote that the

open source software movement proved that a network of passionate, geeky volunteers could write code just as well as the highly paid developers at Microsoft or Sun Microsystems. Wikipedia showed that the model could be used to create a sprawling and surprisingly comprehensive online encyclopedia. And companies like eBay and MySpace have built profitable businesses that couldn't exist without the contributions of users.

All these companies grew up in the Internet age and were designed to take advantage of the networked world. But now the productive potential of millions of plugged-in enthusiasts is attracting the attention of old-line businesses, too (Howe 2006a).

Howe clearly meant that the participation of the crowd in online networks has been a major phenomenon of early Internet stages that has, at some point, attracted the interest of traditional businesses, which were already involved in massive processes of outsourcing. However, it has been subsequently stated that “Wikipedia [is] a classic form of crowdsourcing, according to Howe” (Zhao and Zhu 2014, p.417). This example is just to give an idea of the confusion oftentimes connected to the category, which in some essays has been regarded as involving a very large pool of highly heterogeneous phenomena—e.g. in Carr (2010) unintentional data production, messaging on social networks, peer-to-peer transactions, free collaborative content creation. As a consequence, some attempts to circumscribe more precisely the meaning of the term came over; Brabham, for instance, who provides an extensive analysis of the topic, defines crowdsourcing “as an online, distributed problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals”, merging “a shared process of bottom-up, open creation by the crowd and top-down management by those charged with serving an organization’s strategic interests” (Brabham 2013, p.xxi).

To be clear, the aim of this paper is not—or not in particular, at least—to engage in a theoretical discussion about the category of crowdsourcing. Still, its analysis is important as long as extending the category to cover whatsoever phenomena involving the participation of the crowd within online networks produces, ultimately, only the result to render it useless. When Howe first employed the word crowdsourcing, in fact, he had clearly on his mind a structural bond with classical processes of outsourcing, as openly stated in the quotations reported above. It is also clear that massive crowd participation is nowadays a broad phenomenon, related to the rise of online networks in general, and not to crowdsourcing in particular. What is actually, from my perspective, particularly interesting in the early definition of crowdsourcing is exactly the suggested structural bond with classical outsourcing processes, of which it would represent a particular web-based configuration, which “allows firms to outsource and hire anywhere workers with a computer and Internet connection are willing to labor for pennies a task” (Kingsley et al. 2014, p.6). It is, anyway, generally accepted that some forms of unpaid crowdsourcing exist (e.g. Brabham 2013; Schenck and Guittard 2009). Since I don’t mean to further engage in a discussion on whether crowdsourcing should or not be regarded as a phenomenon which necessarily involves an economic compensation, I will rather focus exclusively on the category of paid crowdsourcing, which is for sure consistent with the definition originally proposed by Howe, insofar as it clearly represents a way to subcontract specific functions—mostly IT related—to the crowd instead of third-party suppliers.

As I already mentioned, paid crowdsourcing usually refers to two different typologies of platforms, that of microwork and of online freelancing, of which I will only analyze the former, through the example of AMT and some reference to Figure Eight. The reason for this choice—alongside the fact that microwork configures more clearly a novel form of exploitation of underpaid human labor—is that online freelancing represents, from my perspective, only a digital version of an already deep-rooted tendency in capitalist’s supply chains—namely, to hire freelancers in order to perform some highly-skilled job within a given production cycle. Differently, microwork configures a radically new form of outsourcing both for its peculiar fragmentation of the production cycle in microtasks—which has been interestingly regarded as a

signal of the emergence of a novel form of digital Taylorism (Altenried 2017)—and, moreover, for its ability to dramatically cut down both the cost of fixed capital and of human labor, stimulating users' participation also through the use of specific psychological methods—gamification, in particular—and of a peculiar rhetoric, which seeks to present microwork not as real labor. In the next two sections, I will further examine these features, through the example of AMT and the analysis of its gamification elements.

3. Amazon Mechanical Turk

In his speech held at MIT conference in 2006 Jeff Bezos—technology entrepreneur, founder and CEO of Amazon—introduced AMT, a platform launched by Amazon in 2003 and opened to other requesters in 2005, with these words:

Mechanical Turk is focused on making possible for you to encode human intelligence inside a software application. [...] So, for a penny you might pay someone to tell you whether there is a human in a photo. [...] We built this technology first for ourselves [...]. We like to have one detail page for a product, we don't wanna have two detailed pages for a product. With millions of detailed pages, it's possible for that to get out of sync. We can algorithmically often get very close to being fairly confident that two detail pages are duplicates, but we can never get certain. With Mechanical Turk we can use our software to [...] find two candidates that are probably duplicates, and then use Mechanical Turk to make a call. [...] this is basically people as a service. [...] Traditionally you might do this with call centers [...] (but) in order to that to be cost effective you have to have a large quantity of work, and there's a big overhead cost in organizing and building a call center. [...] With something like Mechanical Turk, the skill limit comes way down (Bezos 2006).

What is particularly interesting about AMT, from Bezos' perspective, is the opportunity to cut down the costs of certain contents processing through a request addressed to a large pool of on-demand workers, who perform microtasks for a few cents' dollar. On AMT's homepage, the tasks are summarized in four main categories: Image/Video Processing, Data Verification and Clean-up, Information Gathering, Data Processing. They consist mainly of surveys, digital objects' classification and application of tags, verification and production of content, information retrieval. The variety of tasks that can be carried out through AMT is, of course, broader; notwithstanding, those listed above are sufficient to highlight the major purpose of the platform, yet already clear in Bezos' speech: the production, analysis and processing of various types of information through an open call addressed to a large pool of workers. Some operations described on AMT's homepage, such as "categorizing information to match a given schema or taxonomy" or "finding specific fields or data elements in large legal and government documents" can certainly be carried out by an algorithm, which however, as noted by Bezos, is not always enough accurate.

In the face of algorithm's inability to adequately process certain information—such as recognizing an object in a photo, for instance—the simplest solution is therefore to come back to human cognitive work, which, thanks to the brokerage of AMT, has no longer to be performed by a directly hired employee or a third-party supplier, but can

simply be subcontracted to the mass of workers registered on the platform, reducing considerably the overall cost. This way of subcontracting is capable to integrate a large network of users, continuously reassembled in different arrangements, in a supply chain's production cycle. The overall work performed by the network is subsequently verified and collected by the requester, which is either able to accept or refuse every single submission, and thus always obtains the highest productivity at the expense of the workers, whose are liable to be not paid for the tasks they carry out if their work is considered not adequate (Berg 2016).

Most of the work carried out on AMT is intended to either replace algorithm's job or to train AI through machine learning, implementing algorithm's processes of data analysis, information retrieval and so on. Perhaps the latter case is better highlighted by Figure Eight 'human-in-the-loop' notion:

Human-in-the-loop (HITL) is a branch of artificial intelligence that leverages both human and machine intelligence to create machine learning models. In a traditional human-in-the-loop approach, people are involved in a virtuous circle where they train, tune, and test a particular algorithm. Generally, it works like this: First, humans label data. This gives a model high quality (and high quantities of) training data. A machine learning algorithm learns to make decisions from this data.

Next, humans tune the model. This can happen in several different ways, but commonly, humans will score data to account for overfitting, to teach a classifier about edge cases, or new categories in the model's purview.

Lastly, people can test and validate a model by scoring its outputs, especially in places where an algorithm is unconfident about a judgment or overly confident about an incorrect decision (<https://www.figure-eight.com/resources/human-in-the-loop/>).

Drawing from the 'human-in-the-loop' concept explanation, the notion of 'artificial intelligence' proposed by Bezos about AMT acquires a further meaning. Bezos points out that artificial intelligence comes in when a "computer has a task that is easy for a human but extraordinarily hard for the computer. So instead of calling a computer service to perform the function, it calls a human" (Pontin 2007). The task calls a human because the algorithm is not able to solve it easily; however, human labor is not only able to replace, but also to train AI in order to implement its capacity to perform autonomously certain tasks.

Whether a single task is intended to train or replace AI, it is clear that AMT strength resides in its large pool of low-paid, on-demand workforce, which is able to provide a shift in speed and scale of services supply (Irani 2015). Outsourcing specific IT functions to the crowd instead of third-party suppliers guarantees the maximization of cost savings in the analysis, arrangement and creation of data and contents that actually represent an intangible asset for the requester, able to generate greater added value for a firm. Take the example of a caption describing an item sold on Amazon, originally written in a language that is—say—English. Now, if this item is distributed globally by Amazon, to have only the English version for its caption could pose a limit to sales, insofar as a non-English speaker is not able to understand its meaning. AMT yield the solution to cheaply solve this problem, proposing the task of caption's translation to anyone who would accept—say—50 cents dollar to complete it, whereas hiring an external professional translator or a full-time employee would

cost, obviously, much more. We can clearly see, through this example, how AMT could improve the scalability of a business with a very small expenditure, producing for few cents an asset of hardly quantifiable value. Therefore, microwork crowdsourcing emerges precisely as a new form of outsourcing able to cut down dramatically the expenditures and generate low-cost assets for the requester firm, reducing the cost of both labor and fixed capital—cutting out the need to invest in third-party supplies or in directly owned production structures.

The reasons pushing people to accept such a small compensation for their work, with estimated median hourly earnings of \$4.65 for US workers and of \$1.77 for Indian workers—numbers are even lower for Figure Eight, following the same estimates—are well explained by the analysis of Janine Berg (2016). According to Berg's surveys, among the main reasons that lead to microwork we find unemployment, the inability to move from home—for the duty of childcare or other impediments, such as disability—and, moreover, the recognition of AMT as a secondary source of income, whose tasks are often fulfilled in the primary workplace during the regular working time. To consider AMT as a secondary source of income, or an ancillary business to be performed while carrying out other activities, may drive the idea that microwork is not real work, but rather an extra to be gained alongside one's main business (Berg 2016), virtually justifying the small economic compensation provided by the requesters. As noticed by Berg, some workers are even glad to earn such a little revenue from AMT, as long as it represents for them the only opportunity to get some form of income. Yet, it is oftentimes unclear how much value a single, low-cost task—like a text translation—could produce for the requester.

Economic needs are indubitably the main motivation to do microwork. Sometimes, they can be really urgent, as in the case of this girl posting on AMT forum:

I am having a hard time. Mentally, spiritually, physically, and especially financially. My roommate has been out of work for almost 2 months, and ran out of money a few weeks ago... I have to come up with \$\$ if he can't to keep this roof over my own head. And he does now have a job that he is in training for—tho he will not see any money from it for a few MORE weeks. In the meantime, rent is due today, and I don't have all of it. I am going to have to beg the office to take what I do have, and let me pay the rest next paycheck. I could stand that, if that were all there was, but the power and internet need to stay on, or NEITHER ONE OF US will have any income. I paid the power right before cut off last time--that means it can't be long before cut-off notice comes a-knockin again. I know the internet bill is like that too now... I have been beating my head in trying to do more turking, more anything online (quoted in Martin et al. 2014, p.5).

Anyway, many studies have also addressed the importance of intrinsic motivation in stimulating users' participation in microwork platforms (e.g. Berg 2016; Brabham 2013; Ipeirotis 2010; Kaufmann et al. 2011). These motivations range from fun to social competition and are, most of the times, complementary to extrinsic motivations—which are qualifiable, in the case of microwork platforms, primarily as the will to earn money (Kaufmann et al. 2011). In fact, more than 10% of the respondent to Berg's surveys indicate that the main reason for them to do microwork is that they consider it a form of leisure or just enjoy it (Berg 2016, p.9).

It could seem strange that a way “to get rid of [...] tedious work quickly and cheaply” (Irani 2015, p.229) represents for someone a form of leisure, and yet this seems to be undoubtedly the case of—at least—some turkers (the name commonly employed for AMT’s workers). Even if, to my knowledge, no studies have specifically addressed the relation between enjoyment and voluntary acceptance of low wages in microwork platforms, it is very likely that also some of those users who regard AMT primarily as a source of income find some form of enjoyment in microwork, and thus that gamification plays a certain role in pushing forward their engagement besides monetary revenues. The idea I will develop in the next section is therefore that, for a platform like AMT, gamification elements represent a major factor for users’ enjoyment increase, which helps to further induce microworkers to voluntarily accept low wages.

4. Gamification in AMT

I will adopt, in the context of this paper, the most popular definition of gamification, which describe it as “the use of game design elements in non-game contexts” (Deterding et al. 2011, p.2). The most commonly identified gamification elements are points, leaderboards, rewards and badges. These elements, already largely employed in platforms such as Nike+ and Foursquare (Deterding et al. 2011), are capable to increase participation and productivity in crowdsourcing platforms. An experiment conducted on the platform formerly called Crowdfunder (now Figure Eight) has shown how the introduction of game elements inside a crowdsourcing task is able to improve productivity, insofar as they “encourage workers to engage with the task more, independently of the actual monetary reward” (Feyisetan et al. 2015, p.334). The findings of this study reveal that introducing game elements—in this particular case, a level-based structure which allows to go further in the task and tag more images once completed a series—is an effective way to obtain “better accuracy (an improvement of almost 10% compared to the baseline condition) and significantly lower costs per annotated image (5,708 unique labels collected via the game vs. 111 unique labels contributed through equivalent, non-gamified micro tasks [...])” (Feyisetan et al. 2015, p.334). This study interestingly underlines how gamification is able to improve users’ engagement in microwork. As long as “the most reliable way for getting crowd workers engaged remains through explicit external rewards, in particular monetary payment” (Feyisetan et al. 2015, p.334), it seems nevertheless clear that gamification is able to improve productivity and participation in microwork without the need to increase economic compensation.

In AMT, more broadly, the process of obtaining qualifications in order to be allowed to perform certain tasks represents a peculiar way to increase participation in the platform and differentiate workers’ skills. Qualifications are “award(s) you can get given if you pass a certain test”, like the comparison of two different sentences meaning—a “fun test” which is “worth doing”, that can stimulate competition among workers (“see if you can beat my 95% score”) and “qualifies you to take on HITs that require it” (Beresford 2011). In other words, qualifications are a form of skills verification presented like a sort of game and required to carry out specific tasks. I did, for instance, a Reputation Polarity test, which was required to complete a task consisting in detect the opinion polarity (positive/negative) related to some tweets

speaking about a particular brand, company or public entity in general. The test was somewhat challenging and funny, and at the same time was required to verify if I was or not suitable to complete the task. The results of qualification tests are then shown on your qualifications board, together with other indicators such as HITs' approval and rejection rate and the total number of approved HITs.

Qualifications board tends to present the participation on AMT as a sort of game challenge, in which one obtains a certain level of accuracy in tasks' completion and several specific awards. These parameters do not, obviously, end in themselves, but—as already explained above—are intended to qualify workers to perform certain tasks, which could require a certain approval rate and some specific qualifications. Let's take, for instance, a Transcription Task which requires an approval rate higher than 95% and a specific transcription qualification. Since I have a HITs' approval rate of 100%—as long as I didn't complete any task yet and, thus, my work was never refused—I am eligible to complete this one. However, I would also need a qualification for Transcription Tasks in order to be allowed to fulfill it. Qualifications play, to my understanding, a double role on AMT. On one side, they trace a border for the access to certain resources (specific tasks), defining a difference among turkers based on their competences; most of the times, tasks which require a higher approval rate or more qualifications are also the better paid (Martin et al. 2014). On the other side, qualifications introduce a challenging gamification element which is not only able to provide some sort of fun, but also to stimulate self-improvement and competition among turkers. Obviously, this process is complementary to the single task's gamification process described above. Further studies could address the relation between gamification—both of the platform environment in general and of the single tasks—and users' participation through empirical research, to acquire additional evidence of the possibility to increase engagement without increasing monetary compensation through gamification elements. If this process clearly represents an opportunity for company owners to utterly reduce expenditure in ITO—which are, as I suggested above, already significantly cut down by microwork platforms—it also configures a peculiar form of exploitation of underpaid human labor. In the context of AMT, workers are not only pushed to accept low wages by economic needs and lack of opportunities, but also by the intrinsic enjoyment of a platform which, even if providing some sort of fun, is still a place where “crowds are subjected to a form of division of labor that is reminiscent of industrial production” (Aythes 2013, p.112), if not a new type of factory itself, as suggested elsewhere (Altenried 2017).

5. Conclusions

In this paper, I briefly tried to outline how paid crowdsourcing—and in particular its microwork branch—configures a new form of ITO developed through online platforms, which relies on a large-scale, on-demand and underpaid workforce and is able to cut significantly the costs of both fixed capital and human labor. For microwork platforms, gamification elements represent a useful tool to increase users' participation and productivity without increasing economic compensation, and thus an effective complement to extrinsic rewards.

The use of gamification elements to increase the productivity of underpaid workers is very likely to be characterized as exploitationware—an interesting term proposed by Ian Bogost—rather than gamification. The concept of exploitationware, in fact, “allows us to situate gamification within a larger set of pernicious practices in the high-tech marketplace”, leaving gamification to “crass marketers and spineless consultants who embrace it [...] to defend their villainous reign of abuse against customers, employees, and the general public” (Bogost 2011, p.4). Even if Bogost is perhaps too harsh in his attack to the concept of gamification, it is for sure correct to stress the fact that gamification could—and do, in many contexts—configure an hidden and sneaky way to carry on not only the exploitation of “personal information from customers” (Bogost 2011, p.4), but also of paid human labor, as in the case of microwork platforms. Together with the rhetoric which seeks to present microwork not as real labor, gamification is therefore a useful complementary tool for companies to obtain a cheap, scalable, on-demand workforce to meet their production needs. It is thus necessary to challenge it, stressing the fact that microwork should not be just intended as a form of leisure, a hobby or a game, but is always a form productive work, able to considerably increase the added value generated through ITO processes.

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