



crowd must be diverse in opinion (Surowiecki, 2004) in order to provide the best mix of solutions to a problem. Expanding this notion of diversity of opinion, Brabham (2007b) theorizes the importance of diversity of identity, diversity of skills, and diversity of political investment as key to a sufficiently diverse crowd, and thus a successful crowdsourcing application. The problem with this kind of theorizing is that few studies exist about the demographics, skill sets, and political investments of the crowd to support it. How do we know how diverse the crowd must be for a successful crowdsourcing application if we have not yet measured it?

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Furthermore, interest in knowing how, why, and when certain crowdsourcing applications are successful involves understanding the motivations of the crowd to participate in this problem-solving. Uses and gratifications theories suggest that individuals in the crowd are drawn to crowdsourcing applications for a number of reasons and that they are gratified in various ways through participation. Where open source models emphasize the common good (Bonaccorsi and Rossi, 2003, 2004; Lancashire, 2001) and hobbyist (Ghosh, 1998a, 1998b; 2005) interest in the success of certain applications, crowdsourcing models add to these factors the existence of a bounty and a more explicit encouragement of the learning of new skills for entrepreneurship. The bounty can sometimes consist of cash and prizes, but it also includes cultural capital and can help people learn skills and develop their portfolios for future work and entrepreneurship (Mack, 2006). Again, the problem with this kind of theorizing about what motivates the crowd to participate in crowdsourcing applications is a lack of research. What moves the crowd to participate in this form of distributed, collective problem-solving?

This study begins to answer some of these basic questions about the way crowdsourcing functions. An online survey of the community at iStockphoto (<http://www.istockphoto.com>) — a microstock photography company and crowdsourcing exemplar — provided data for this article.

## Research questions and concepts

Two research questions guide this study:

- RQ1: What are the demographics of the crowd?
- RQ2: What motivates the crowd to participate in crowdsourcing applications?

### *iStockphoto as crowdsourcing application*

Howe (2006b) offered the following definition for *crowdsourcing*:

Simply defined, crowdsourcing represents 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. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers. [1]

Howe (2006c) further clarified that "It's only crowdsourcing once a company takes that design, fabricates [it] in mass quantity and sell[s] it." [2] Companies such as Threadless (<https://www.threadless.com>), iStockphoto, and InnoCentive (<http://www.innocentive.com>), as well as user-generated advertising contests, are examples of the crowdsourcing model in action (Brabham, 2008).

For the purposes of this study, iStockphoto is the exemplar application of crowdsourcing under examination. iStockphoto is, in essence, a giant, royalty-free stock photography agency. At iStockphoto, the community of amateur photographers — "iStockers" — upload their stock images, animations, and video clips to the Web site. Clients visit the Web site, download the stock they want, and individual photographers make small profits per download, while iStockphoto takes a portion of the profits. For iStockphoto, the problem is how to produce affordable stock photography. It is put into the form of an open call, and the community provides solutions by uploading their creative content. iStockphoto then attracts clients who select the stock they want and users and iStockphoto make money on it, just like an agency structure (iStockphoto 2008a, 2008b, 2008c). Crowdsourcing itself is a process, a model, for distributed problem solving through the Web (Brabham, 2008).

## *Crowd wisdom*

In a crowdsourcing application, the *crowd* is the collective of users who participate in the problem-solving process. Since crowdsourcing takes place through the Web, the crowd is necessarily comprised of Web users. The crowd consists of individuals who posit solutions in a crowdsourcing application, though the crowd may also consist of firms that put forth solutions on behalf of a company. Thus, though it may be simpler to conceptualize the crowd as a composite of individual Web users, a more precise concept for the crowd is a composite of ideas put forth by solo or group entities.

It is in this composite or aggregate of ideas, rather than in a collaboration of ideas, where strength lies. Based on his investigation of numerous case studies, from futures markets to cattle estimating, Surowiecki (2004) found that "under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them." [3] This "wisdom of crowds" is derived not from averaging solutions, but from aggregating them:

After all, think about what happens if you ask a hundred people to run a 100-meter race, and then average their times. The average time will not be better than the time of the fastest runners. It will be worse. It will be a mediocre time. But ask a hundred people to answer a question or solve a problem, and the average answer will often be at least as good as the answer of the smartest member. With most things, the average is mediocrity. With decision making, it's often excellence. You could say it's as if we've been programmed to be collectively smart. [4]

The Internet is that perfect technology capable of aggregating millions of disparate, independent ideas in the way markets and intelligent voting systems do, without the dangers of "too much communication" and compromise [5]. Crowdsourcing applications are ventures that harness and aggregate this wisdom of the crowd to produce solutions and products superior to those of collaborative groups or solo geniuses. Thus, understanding more about this powerful crowd is important.

If it is to be at all innovative, an aggregate of ideas must be diverse. "[D]iversity and independence are important because the best collective decisions are the product of disagreement and contest, not consensus and compromise." [6] Brabham (2007b) asserted that

diversity — in terms of gender, sexuality, race, nationality, economic class, (dis)ability, religion, etc. — is important because each person's unique identity shapes their worldview. Thus, we can assume that differing worldviews might produce differing solutions to a problem, some of which might be superior solutions because the ideas might consider the unique needs of diverse constituencies. [7]

Despite the need for diversity in the crowd to develop effective solutions, research shows substantial gaps in access even to the technology to participate in crowdsourcing (Fox, 2005). This "digital divide" means that the crowd currently is likely to be white, middle- or upper-class, English-speaking, higher educated, with high-speed Internet connections in the home. Moreover, the most productive individuals in the crowd are also likely young in age, certainly under 30 and probably under 25 years of age (Lenhart, *et al.*, 2004; Lenhart and Madden, 2005), as this age group is most active in the so-called Web 2.0 environment of massive content creation, such as through blogging (Rainie, 2005; Madden, 2005; Madden and Fox, 2006).

## Motivations

The ways in which individuals use and are gratified by new media technologies, such as the Internet, differ from studies of individuals' use of "older" media technologies, such as newspapers and television. The primary categories of uses and gratifications that emerged from the many early individual and collaborative efforts of Blumler and Katz (Blumler, 1979; Blumer and Katz, 1974; Blumler, *et al.*, 1985; Katz, *et al.*, 1973a, 1973b), for example, are necessarily limited by the fact that the media of the time of those studies did not offer nearly as many interactive possibilities and user-productive modes as the digital technology of the Web era. Today, audiences do not merely use and seek pleasure from content. Audiences are producers and consumers, what futurist Alvin Toffler (1980) called a "prosumer," of media content. This is not to say Blumler, Katz, and other behaviorist researchers of the "old" media era do not still have some relevance. After all, their findings were important in that they discovered an audience that was not merely a passive receptacle for media content, but was instead fundamentally interactive. Early uses and gratifications research prophesized a moment when the pleasures of media interactivity would amplify if users were given media technologies that truly enabled production. The Internet — specifically given the recent Web 2.0 trend toward massive user-generated online content — is the vehicle for distributed, mass, *pleasurable* production.

To adapt to the new character of digital media, more recent studies into audience motivations for online media use have focused on the curious practice of open source software production. In this production, users essentially work for free to create software (Coar, 2006), which in itself undermines the power of simple extrinsic motivators such as money and also complicates intrinsic motivators. Several studies on motivation in open source participation (Bonaccorsi and Rossi, 2004; Hars and Ou, 2002; Hertel, *et al.*, 2003; Lakhani and Wolf, 2005) support what open source pioneer and founder of Linux, Linus Torvalds, predicted would be the primary motivator: the pleasure found in doing hobbies. As Torvalds stated, "most of the good programmers do programming not because they expect to get paid or get adulation by the public, but because it is fun to program." [8]

Lakhani, *et al.* (2007) measured motivations of winners of crowdsourced scientific problems at InnoCentive.com, another exemplar crowdsourcing application. For a number of reasons, however, I respectfully avoid most of Lakhani, *et al.*'s (2007) survey instrument for motivations. First, the crowd at InnoCentive is incredibly specialized and educated, the "majority (65.8 percent) holding a Ph.D." and many of those in scientific fields [9]. The crowd at iStockphoto is surely not entirely comprised of professionally trained graphic designers and photographers, holding MFAs in their fields. The problem at iStockphoto requires far less specialized problem-specific skills, presumably skills a large portion of the population might have — at least a larger portion than have Ph.D.s. Second, Lakhani, *et al.*'s (2007) study found the possibility of monetary reward to be a strong indicator of success in winning InnoCentive challenges, along with intrinsic motivations (*e.g.*, the joy of solving scientific problems) and simply having free time to fill [10]. The opportunity to gain new skills or propel one's career were not strong motivators [11]. This is problematic for the present study because monetary reward for individuals at iStockphoto (about US\$0.20 per download) is low compared to InnoCentive, where awards offered by "seeker" companies range from US\$10,000 to US\$100,000 for winning solutions [12]. This steep of a bounty understandably makes the desire for financial gain a strong motivator for participation. Also, the opportunity for gaining new skills and possibly advancing one's career are low for InnoCentive members, probably due to the fact that so many are indeed Ph.D.s with established careers in industry, corporate research and development, or the academy. Many of the biographies of winning solvers at InnoCentive, for instance, state that they are (likely happily) employed in scholarly or high-technology institutions, more likely to be in a career suitable to their goals. At least from the narratives emerging from iStockphoto members and crowds at other art and design applications (Mack, 2006; Brabham, 2007a; Livingstone, 2007a, 2007b), the opportunity to learn new skills and advance career and entrepreneurial goals is probably much stronger than that of InnoCentive members. For these reasons, then, Lakhani, *et al.*'s (2007) survey instrument is not fully appropriate for this study of iStockphoto members. Lakhani, *et al.*'s (2007) findings, however, could triangulate well with the outcomes of this study to produce a coherent portrait of the motivators of crowds across a variety of applications.

Instead, for the purposes of this study, which seeks to identify the motivators for participation in crowdsourcing, a model similar, but not identical, to open source production (Brabham, 2008), I largely adopt Hars and Ou's (2002) concepts and survey instrument, which they used to measure motivations for open source software production. Using their instrument, I adjusted some of the questions for relevance to crowdsourcing applications in creative and design fields and deleted questions that could not be translated in any real way to the present study. This modified form of Hars and Ou's instrument serves as a means for operationalizing the motivation concepts. These concepts, as identified by Hars and Ou (2002), include general questions about motivation, questions about intrinsic motivators, and external rewards that

include personal needs, future returns, and altruism. The modified Hars and Ou instrument is a more robust instrument for measuring motivations, robust enough to account for the same kinds of questions Lakhani, *et al.* (2007) asked of InnoCentive members, but general enough for the purposes of iStockphoto.

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## Hypotheses

Therefore, given the previous discussion, the two broad hypotheses I explore in this study include:

- H1: The crowd is more likely to be majority white, middle- or upper-class, male, college-educated, and with high-speed Internet connections in the home.
- H2: Individuals in the crowd are more likely to be motivated to participate in crowdsourcing applications by the possibility of gaining peer recognition for their ideas and by the opportunity to learn new skills than by other motivators.

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## Method

After Institutional Review Board approval, an anonymous online survey was administered to adult members of the crowd at iStockphoto from 10 October to 1 November 2007 to gather the data for this study. iStockphoto granted a special opportunity to the author to implement this survey to its membership and promote it on the site by "pinning" the survey link at the top of the Web site's members-only discussion forum. In the three weeks of data collection on the site, the survey collected 651 responses to motivations and demographic questions. In any given question, some participants chose not to respond, however even the question about age, which received the lowest number of responses, yielded 635 responses. Like Hars and Ou's (2002) survey instrument, motivations questions were operationalized across a seven point Likert scale, from "1 = strongly agree" to "7 = strongly disagree."

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## Results

Demographic data show that the majority of iStockers participating in this survey fit the predicted "elite" profile of a heavy Internet user as developed through the majority of the so-called digital divide literature. The typical iStocker is a white, married, middle- to upper-class, higher educated, 30-something, working in a so-called "white collar" job with a high-speed Internet connection in the home.

Of those who answered the question about age, the youngest was 18 and the oldest was 71. Median age was 36 and mean age was 37.8 years old. Men made up 64.7 percent of iStockers and women 34.9 percent. Married iStockers comprised 57.7 percent, 29.9 percent were single and never married, and the remainder of responses (12.3 percent) include separated, divorced, widowed, and "other." "White, not Hispanic" comprised 88.2 percent of all responses to the question about race. Geographically, 56.4 percent of respondents hailed from North America, 33.4 percent from Europe, and 4.1 percent from Australia and New Zealand. Specifically, 45.9 percent of all respondents resided in the United States, 9.2 percent in Canada, 8.4 percent in the United Kingdom, and 4.8 percent in Germany, with the remainder spread relatively evenly across 47 other countries. U.S. states or Canadian provinces with the highest percentage of iStockers responding to the survey included California (13.9 percent), Ontario (6.3 percent), Texas (4.5 percent), Florida (4.3 percent), and Washington state (4.0 percent).

To account for an international mix of respondents, answer choices for the question about

socio-economic status included the following options: "wealthy," "able to pay my bills with extra to save," "able to pay my bills without extra to save," "trying to make ends meet," and "poor." More than two-thirds of respondents (68.5 percent) claimed they were able to pay their bills with extra money to save, while 21.1 percent were able to pay bills without extra to save. Self-disclosed wealthy iStockers comprised 5.6 percent, while 4.8 percent indicated they were trying to make ends meet or poor. The most common occupations indicated were self-employed (30.2 percent), professional or technical (28.2 percent), and educator or student (7.9 percent). Professional photographers and designers comprised 3.9 percent, and 7.6 percent selected the "other" category for their occupation, with 0.6 percent writing in "iStocker" as their occupation.

iStockers are a largely higher educated crowd, as well, with 77.6 percent of respondents having completed at least a U.S. associate's degree (or an equivalent two-year, post-high school degree). Bachelor's degrees were the most common highest educational achievements of iStockers (43.5 percent), and more than one-fifth (20.2 percent) of all respondents had completed degrees beyond the bachelor's level. High-speed home Internet connections were extremely commonplace (97.4 percent), 98.3 percent of iStockers considered themselves skillful at using the Web, and 58.8 percent of respondents spend 22 hours or more on the Internet per week. About half (49.5 percent) maintain a Weblog and about half (56.2 percent) read others' Weblogs. iStockers mostly do not chat, instant message, do online dating, use social networking sites, or do online gaming. However, like most people, they largely use the Internet for e-mailing, reading online news, and searching for information on the Web.

Participants had the option to indicate multiple responses to statements for a question asking why they participate at iStockphoto. The opportunity to earn money, improve one's own creative skills, and use the site as a creative outlet were the most popular reasons for participation (see Table 1). To pass the time when bored and to build networks through the site with other creative people or with friends were the least popular reasons for participation.

<b>Replies</b>	<b>Percentage</b>
The opportunity to make money	89.8
It helps me improve my photography, video, and/or illustration skills	79.1
It is a creative outlet for me	76.9
It is fun	71.9
The opportunity to earn a reputation as a good photographer/artist	49.8
I can produce photos, videos, and illustrations that I like	48.2
It is a better way to make stock photography, video, and illustrations	38.3
To build a network with other creative people	36.7
It passes the time when I am bored	21.2
To build a network of friends	16.6

Participants found creating, browsing, and commenting on photographs, videos, and illustrations very fun and enjoyable (see Tables 2, 3, 4, and 5). To a lesser extent, participants also enjoyed participating in the discussion forums at iStockphoto (see Table 6).

## **Table 2**

## **Table 3**

**Table 4****Table 5****Table 6**

Participants feel that creating photographs, videos, and illustrations for iStockphoto gives them the chance to do the jobs they feel they do best (see Table 7). Participation in the iStockphoto community gives participants the chance to feel a sense of accomplishment (see Table 8), competence (see Table 9), and effectiveness (see Table 10). In general, iStockers rate their participation in the iStockphoto community an important activity for themselves (see Table 11).

**Table 7****Table 8****Table 9****Table 10****Table 11**

iStockers strongly believe that their participation on the site will raise their skill level in photography and illustration (see Table 12). Yet, they believe to a lesser degree that their involvement on the site will make them more marketable (see Table 13), and they are generally unsure whether their participation at iStockphoto will result in them finding a better job (see Table 14). Like most people, participants care about money (see Table 15), and they also believe that, one way or another, they will make money from their participation at iStockphoto (see Table 16).

**Table 12****Table 13****Table 14****Table 15**

**Table 16**

Participants only somewhat agreed that recognition from others was their greatest reward (see Table 17). Participants largely thought that iStockers should help each other out (see Table 18) and generally felt that the iStockphoto community is one big family (see Table 19), but were very unsure as to whether one can always trust an iStocker (see Table 20). Participants were quite proud to be part of the iStockphoto community (see Table 21).

**Table 17****Table 18****Table 19****Table 20****Table 21**

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## Discussion


The first hypothesis explored in this study was supported. In line with much of the literature on the so-called digital divide, the iStockphoto community is an elite and relatively homogenous crowd. Though there is a noticeably diverse mix of nationalities represented in the iStockphoto community, middle- and upper-class, higher-educated whites are the dominant group. iStockers are also heavy Internet users and are privileged to have high-speed Internet connections in the home. Crowdsourcing companies like iStockphoto are meritocracies. Individuals' ideas and creative products are judged on their merits without much attention paid to the identities of those who created them. However, in such a homogenous and privileged crowd, we must be cautious about how the ideas borne of the crowd are celebrated as "the best that rose to the top of the heap." Celebrating the collective intellect of online creative communities like iStockphoto means celebrating the best of a white, financially comfortable collective. There are ramifications for situating the logic of a meritocracy within a discourse of pure democratic process. To assume anyone has the opportunity to contribute to an open community like iStockphoto ignores the fact that the reproduction of a white, middle-class aesthetic takes place on the site. And as marketing practitioners and Web developers purchase these stock images at iStockphoto to build brochures and Web sites, our mediated experience as consumers and Web users continues to privilege a narrow creative interpretation of the world.

The second hypothesis in this study is only partially supported. While peer recognition and the opportunity to learn new skills were important motivators for participation at iStockphoto, the opportunity to make money on the site was the most important. The sheer enjoyment of participating at iStockphoto is also a strong motivator. Interestingly, though, despite so much emphasis placed on the notion of community by iStockphoto, other crowdsourcing companies (e.g., Threadless), and by bloggers writing about crowdsourcing companies (see <http://www.crowdsourcing.com>), participants in this study were largely not interested in

building a network of friends or creative professionals through the site. There were also issues of trust among members. Simply put, there is more work and more individual skill development taking place at iStockphoto than community building, and it can be assumed that many iStockers view the site as a place to make money than as a place for friendship. To add to this claim, about 80 percent of iStockers found their work at iStockphoto to be at least somewhat profitable, and 17.8 percent consider their iStockphoto work extremely profitable. The majority of participants (72.4 percent) also submit work to other microstock photography sites. More research into the ways individuals in the crowd at crowdsourcing sites view their work in terms of a professional identity would be valuable. Clearly, crowdsourcing sites are not communities from which good ideas and products spring from. Crowdsourcing communities are new hybrid hobby/work spaces where real money can be made. Friendship and other social networking features are secondary to individual fulfillment and profit in the crowdsourcing context.

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## Conclusion

These simple data present some of the first insights into the composition and motivations of the crowd in a crowdsourcing application. Since Jeff Howe's (2006a) article on crowdsourcing in *Wired*, there has been substantial speculation in Weblogs as to who is in the crowd and why the crowd participates in these moments of content creation. Based on this survey of 651 members at iStockphoto, it can be concluded that the crowd at iStockphoto is very much in line with the profile of the "elite" Web user: white, middle- and upper-class, higher educated, and with home high-speed Internet connections. We must remain conscious of digital divisions and how homogenous crowds may generate homogenous aesthetics and ideas. We should keep a critical eye on the products produced by crowds and not assume the meritocracy of crowdsourcing equates to a true democratic, accessible, co-creative process. Furthermore, the crowd at iStockphoto is motivated by money and the opportunity to develop individual creative skills, not necessarily by the desire for peer recognition or the opportunity to build a network of friends and creative professionals. As we continue to study crowdsourcing companies, as much attention must be paid to notions of professionalism and business as to social networking and hobbies. More research is needed into the ways individuals in the crowd perceive themselves as professionals or entrepreneurs rather than amateurs and hobbyists. Crowdsourcing blurs the lines between what constitutes work and play. 

## About the author

Daren C. Brabham is a graduate teaching fellow and Ph.D. student in the Department of Communication at the University of Utah. The author thanks Glen Feighery and Ron Yaros for their help in shaping this study, as well as Kara Udziela, Kelly Thompson, and Yvonne Beyer at iStockphoto, who graciously provided feedback on the survey instrument and distributed the survey to the iStockphoto community.

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## Notes

1. Howe, 2006b, ¶ 5.
2. Howe, 2006c, ¶ 1.
3. Surowiecki, 2004, p. xiii.
4. Surowiecki, 2004, p. 11.
5. Surowiecki, 2004, p. xix.
6. *Ibid.*
7. Brabham, 2007b, ¶ 3.
8. Ghosh, 1998b, ¶ 65.

- [9.](#) Lakhani, *et al.*, 2007, p. 8.
- [10.](#) Lakhani, *et al.*, 2007, pp. 10–11.
- [11.](#) Lakhani, *et al.*, 2007, p. 11.
- [12.](#) InnoCentive, 2007; Howe, 2006a, ¶ 23.

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## Editorial history

Paper received 7 April 2008; accepted 20 May 2008.

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Moving the crowd at iStockphoto: The composition of the crowd and motivations for participation in a crowdsourcing application

by Daren C. Brabham

*First Monday*, Volume 13 Number 6 - 2 June 2008

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