

Expanding Minds and Narrowing Divides in India through Gamivism

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Abstract

The board game *Bumper Crop* was designed and its social impact tested as part of the *Play to Grow* project to explore what game design properties and mechanisms are most effective in promoting change-related agendas. *Bumper Crop* was designed for both physical and digital platforms, to engage young urban adults in complexities of rural development, agricultural practices and issues facing farmers in India. The project involved a partnership with Digital Green, a non-profit and charitable organisation helping small and marginal farmers in both India and low-income African countries to share best practices with their communities through creating and sharing videos. Combining real life content with serious play, *Bumper Crop* was designed through a participatory and human-centred design approach with field visits, dialogues and play tests with farmers working with Digital Green in the region of Madhya Pradesh, and with young urban adults in Mumbai. Contrary to expectations, initial evaluation results revealed that the game's original purpose of generating empathy for farmers was not realised amongst the available pool of samples. Surprisingly, however, it did serve as an effective tool for peer-to-peer learning between farmers themselves, bringing the game back to Digital Green's core business of creating platforms for sharing of expert knowledge.

Key Words: Social impact gaming, digital activism, participatory design, game-based learning

1. Introduction

With social impact games being an expanding sub-genre of serious games, further robust evaluation and comparative studies are necessary to determine what game technology and design properties and mechanisms might be most effective at promoting change-related agendas. There is also additional need for more focused research on specific sociocultural contexts. The *Play to Grow* project explored and tested the use of computer games as a method to promote young urban adults' awareness of issues facing small farmers in India. The project resulted in the creation of *Bumper Crop*, a board game for both physical and digital platforms based on the experiences and challenges of an Indian farmer. The game combines real life content with serious play, through a participatory and human-centred design approach, which involved field visits, dialogues and play tests with farmers in the region of Madhya Pradesh, and initial evaluations with a focus group of young urban adults in Mumbai. The initial evaluations of these different groups

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revealed contrasting results, which suggest different approaches to serious games that present their own design challenges: games for advocating complex systems and issues for lay audiences and games for peer-to-peer learning and sharing knowledge for expert audiences. This paper presents an analysis of the chosen game mechanisms, narrative content, artwork and evaluation methods employed in the project and draws upon the initial evidence and experience gathered from the research's specific sociocultural context to consider strategies and ideas on how game technologies, and associated design methods and mechanisms, may most effectively promote change-related agendas.

2. Participatory Design and Evaluation Methodology

The participatory design approach employed in *Play to Grow* involved consultation with farmers and young urban adults. Field visits were made to several small-scale farms around the village of Sanchi (region of Madhya Pradesh, India), where we met with around 40 farmers. Conversations were held with both individuals and communities of farmers to identify problems or issues most relevant to them, and the narratives the game might communicate to an urban audience. These conversations provided content for the game. Early versions of *Bumper Crop* were play-tested informally with players and improvements were made iteratively.

Initial evaluations were made of a physical prototype of the game with a focus group of 15 young urban adults in Mumbai, India¹, and 24 farmers in Rajgarh, an area of Madhya Pradesh bordering Rajasthan, of which 12 were tested using a questionnaire. Given differences in levels of literacy amongst one of the farmers' focus groups some parts of the evaluation were conducted via discussion. Further evaluations are being conducted with young urban adults in New Delhi to provide a wider sample size. Questionnaires combining both quantitative and qualitative methods were employed with some shared questions between the different focus groups. With young urban adults, some questions were aimed to evaluate the effectiveness of the game at generating empathy and awareness of farmer's lives. With farmers, questions were aimed at evaluating how accurately the game communicated the realities of their lives.

The research questions formulated were: Can this game help urban young adults gain a better understanding of farmers' lives and promote empathy towards them? Would urban young adults find such a game relevant and engaging? To what extent do young urban adults' response differ from those of farmers?

3. Project Aims and Context: Bridging an Urban-Rural Divide

While farmers in India comprise the majority of the population, there is a wide gap between them and India's web-connected urban educated youth. India is one of the world's largest growing economies, has the world's third largest Internet user-

base and ranks second in agricultural output (OECD data tables). While small holding farmers are part of a sector excluded from this growth, with poor performance and increased farmer suicides as a result, some argue that the future of sustainable agricultural growth and food security in India depends on the performance of small and marginal farmers (Dev 2012). This disparity is particularly evident in the specific geographical setting of this research in the region of Madhya Pradesh, which is one of India's least developed states, has the lowest nutrition and health indicators, and is the most food insecure with literacy rates below the national average (UNDP Millennium Development Goals).

While some rural youth look forward to migrating to urban areas and copy urban lifestyles, almost no one from urban areas look forward to returning to villages. Although they may know that rural life is hard, they may not be aware of specific issues that challenge farmers. As Dipankar Gupta suggests, 'The imagined village of the well-to-do urban Indian is quite far from what is the reality on the ground' (Gupta 2003, 7).

4. Digital Activism or Gamivism

Recent research has shown that younger generations are increasingly using new social media for entertainment and self-gratification. In moments of crisis they are using them to mobilise significant human and infrastructural resources to make immediate interventions (Shah 2011). While these users may remain ambivalent about identifying with particular political causes, the *Play to Grow* project's initial aim was to leverage those skills through a social impact game. We developed and tested *Bumper Crop* to motivate and sensitise young urban adults towards farmers' problems with the aim to increase awareness and generate empathy with challenges facing small Indian farmers.

Interactive immersive digital games offer hypothetical, safe and motivational environments where it is possible to practice skills, stimulate dialogue, and animate complex ideas, systems and problems. New genres and applications of serious games are emerging to exploit these capabilities for educational and societal benefits, and as innovative research tools for analysing and understanding human behaviour across the disciplines of biology, economics, psychology, computing and sociology. As such, serious games are emerging as a distinct genre of interactive media that integrates informational content within games technology for educational opportunities (Ratan and Ritterfeld 2009). The alignment of gamification with activism may be the emergence of a new form of digital activism, or *gamivism* (Myers 2013).

It is possible to draw upon the inherent capacities of digital gaming as tools and platforms to leverage the power of empathy, identification, self-connection, engagement and imagination. In doing so, social impact games promote outreach, fundraising, civic engagement and awareness for social change agendas such as poverty alleviation, racism or even the impact of global environmental change on

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community dynamics. Research such as that offered by Kimmt has found that computer games can promote more direct, self-connection between players and game world events (Klimmt 2009, 251) and identification and empathy formation across cultural divides (Bachen et al 2012). While empirical research has demonstrated the persuasive power of fictional media content (Green & Brock 2000), further evaluation is required on impacts of immersive capacities afforded through games' multimodal and interactive media content. Games such as Darfur is Dying (2006), Ayiti (2006) and ICED (2008), to name a few, draw upon these capabilities to promote social change agendas.

5. Bumper Crop Concept

A *Bumper Crop* player's objective is to complete the harvest of three crops first. Players roll a die to move backwards or forwards on a game board. They land on spaces and complete tasks to grow crops through a cycle of agro-food production. They may also land on spaces representative of the kind of personal, cultural, political, environmental and economic challenges that small-holding Indian farmers face along the wider agro-food chain as a whole and that decrease or increase their resources. To manage the game's complexity and to keep gameplay interesting, both the challenges and their technical solutions were somewhat simplified compared to real life settings. However, players are able to find out more about farming practices and experiences referred to in the game by scanning 'QR codes' that appear on game cards with a QR scanning application on a mobile device. These codes link to selected videos from the Digital Green archive.

There are multiple states of fun and complementary game mechanics that encourage different levels of engagement. Nicole Lazzaro identifies four mechanics that drive different emotions of engagement: creative and role play for 'Easy Fun', difficult goals for 'Hard Fun', opportunities for competition and cooperation for 'People Fun' and meaningful experiences affording transformation and change for 'Serious Fun' (Lazzaro 2004). During the *Bumper Crop* design process, different game concepts and mechanisms were explored, to maximize inclusion and balance of factual or serious content while engaging these different experiences. A game board platform was chosen for its familiarity and opportunities it enables for: creativity through adopting roles in the simulation of real life experiences, challenge through strategy, social and competitive engagement with multi-player interaction, meaningful communication of issues through content. Once a decision was made on the game mechanism, the challenge was to include more strategy, which affords more opportunities for mastery, sense of accomplishment, and critical thinking.

Our initial informal play tests found that even when players were losing and their level of fun and accomplishment was low, they were making implicit narratives and different roles within the game explicit by linking their experiences

with that of farmers who are struggling to acquire resources and survive. One player likened another player that was gaining resources and getting crops to harvest (i.e. winning the game), to farmers from the Punjab region of India, where farmers are better off. This experience of contrasting roles in the gameplay invoked significant debates on food production in India. For example, where prosperity of the Punjab is attributed to its pioneering of techniques introduced through the Green Revolution (year-round irrigation, increased mechanization, intensive farming techniques using chemical fertilizers, pesticides and High Yield Variety seeds), some have argued its effects have increased social marginalization of small farmers and harm to biodiversity, environment and health (Sen 1974, Glaeser 1987, Shiva 1991, Perkins 1997).

Bumper Crop presented an interesting design challenge to communicate such realities and complexities of farmers’ lives and the agro-food production system within the constraints of 60 board spaces. The visual design of the game board and equipment was constructed to simulate an aerial view of a field system made from real seeds, grains and textiles. These tangible elements of farming reinforce the real world content of the game through textual and visual storytelling.

6. Initial Evaluation Results

In all 8 pre-playtest and 34 post-playtest questions were asked to the young urban group. However, two questions were quantitatively assessed before and after gameplay to determine their initial attitude to farmers (Fig 1).

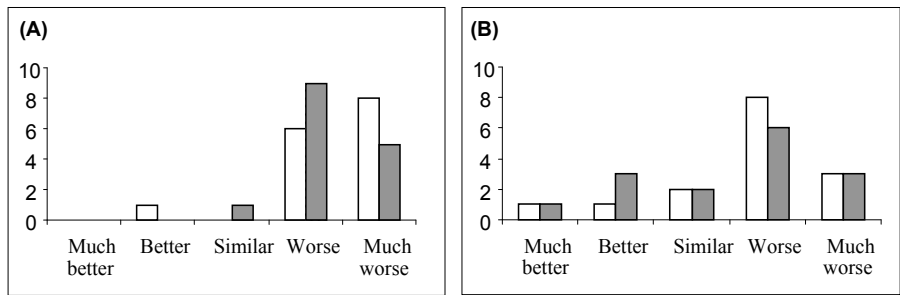


Figure 1. Responses of 15 young urban adults to the following pre and post-game questions. (A) Compared to your own life, what do you think a typical Indian farmer’s quality of life is? (B) Compared to your own life, what kind of support do you think a typical Indian farmer receives from the government?

Pre-play results suggested that urban young adults already felt that farmers’ lives were tough and they themselves were much better off. After playing the game for one hour, perceptions did not seem to have changed significantly. Whilst

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statistical significance could not be assessed given the low initial sample size, responses indicated there was some shift from the initial attitude towards farmers. Indeed, players tested seemed to perceive less empathy generally, after playing the game. For example, three players perception shifted from perceiving farmers' quality of life from 'much worse' than theirs to just 'worse' after playing the game. After playing the game, two players found that governmental support towards farmers was actually better than they had originally thought. Differences were found in the responses of farmers and urban youth on questions related to relevance and engagement. When asked whether they learnt something about farming, the urban group responded with a balanced response eight agreed, one disagreed, and five were neutral. In contrast, seven farmers strongly agreed, four agreed, one disagreed and one was neutral.

There were also differences in perceptions about how realistic the game was between urban young adults and farmers. Farmers' responses tended to demonstrate the power of the game as a serious device to learn about better agricultural practices by diversifying income, by being more strategic in planning and preparation or by using new techniques. When asked if the game communicates something about their lives, the farmers' comments indicated that it was close to their reality: 'It relates to our life very much and all the upheavals that come into our lives', 'We have to pay for weddings and we run out of money, have to borrow from people', and 'Our crops are attacked by insects.' In contrast, one urban young adult commented that situations in the game were 'unrealistic'.

Additionally, there were differences in the two groups' responses to the statement 'I enjoyed playing bumper crop'. The urban group was split with seven agreeing, seven disagreeing and one remaining neutral, whereas eight farmers strongly agreed, three agreed and one was neutral. Farmers' comments suggested that they enjoyed the game and took it very seriously, because it strongly related to their own life, while for the urban youth, this was just another game. Also, farmers agreed the game was easy to understand in contrast to the urban groups' feedback in which only three agreed that the game was easy to understand. Rather than enjoying playing the game for its narrative content, the urban players' responses suggested that playing to win was more important and they made more comments about wanting additional strategy and difficulty. In contrast, farmers' comments often mentioned playing cooperatively or aspects of 'people fun.'

7. Conclusion

Evaluation results of *Bumper Crop* revealed a more significant level of enjoyment, learning and identification by the farmers as expert players rather than by the young urban adults as a lay audience. While farmers were not intended as the target audience, initially, they were considerably more immersed in the game and the learning opportunity it afforded. In particular, their gameplay drew upon

the dialogic, participatory and immersive advantages of games thinking to strategise their own lives and practice. For them, the instructional knowledge within the game was situated within an experience where they could explore lived practice (Myers et al. 2014). While the responses from a few urban players indicated some instances of more nuanced understanding of farming following from gameplay, their preoccupation was essentially based on how to win. Instead of being compelled by the social realism of the narrative content, it demotivated their game play or they questioned its reality. Overall, it did not seem to have a significant impact in changing their perception of the game as real life or generating more empathy towards small farmers. This raised questions about the most effective way to bring serious issues to life with immediacy, immersion and identification. The urban players' responses signalled their desire for more complexity and challenge in terms of strategy and choice, aspects of gameplay that afford more agency, interaction and immersion in terms of critical thinking. With the content being more representational for them than lived, creating more opportunities for these aspects of gameplay are important to consider.

From our initial consultation with farmers, one message that they wanted to communicate to urban people was that urban people need farmers to survive. Perhaps the game narrative and mechanism employed in *Bumper Crop* did not directly express the urgency or global significance of that message, nor did it invite urban players to consider how their own lives were implicated within the issues and challenges facing farmers. When designing games to advocate social issues, important considerations should be to engage the players more directly and immediately in strategizing, problem solving or resolving conflicts they can identify as relevant to their own survival. The surprising results of the initial evaluation are informing the development of the next iteration of the game as a digital prototype and the project's hypotheses are being explored and tested further with a wider sample size through evaluations with young urban adults in New Delhi.

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Notes

¹ The evaluations with urban young adults were conducted by a group of Master of Design students as a part of the Usability Evaluation course led by Professor Anirudha Joshi at Indian Institute of Technology Bombay.

Bibliography

Bachen, C. M. et al. 'Simulating REAL LIVES: Promoting Global Empathy and Interest in Learning Through Simulation Games,' in *Simulation & Gaming*, XX (X), 1-24, 2012.

Bente, Gary and Johannes Breuer. 'Making the Implicit Explicit: Embedded Measurement in Serious Games' in *Serious Games: Mechanisms and Effects*, edited by Ute Ritterfeld et al., 322-342, New York: Routledge, 2009.

Dev, S. Mahendra. 'Small Farmers in India: Challenges and Opportunities', Indira Gandhi Institute of Development Research, Mumbai, June 2012, accessed May 9, 2014, <http://www.igidr.ac.in/pdf/publication/WP-2012-014.pdf>.

Glaeser, Bernhard. *The Green Revolution revisited: critique and alternatives*. Hemel Hempstead: Allen & Unwin, 1987.

Green, Melanie C. & Brock, Timothy C. 'The role of transportation in the persuasiveness of public narratives', in *Journal of Personality and Social Psychology*, 79(5), 701-721, 2000.

Gupta, Dipankar. 'The Vanishing Village: Culture and Agriculture in Rural North India.' Paper presented at the *Roles of Agriculture International Conference* of the Agricultural and Development Economics Division of the Food and Agriculture Organization of the United Nations, Rome, Italy, October 20-22, 2003.

Ratan, Rabindra and Ute Ritterfeld. 'Classifying Serious Games' in *Serious Games: Mechanisms and Effects*, edited by Ute Ritterfeld et al., 10-24, New York: Routledge, 2009.

Klimmt, Christoph. 'Serious Games and Social Change: Why They (Should)

Work', in *Serious Games: Mechanisms and Effects*, edited by Ute Ritterfeld et al., 248-268, New York: Routledge, 2009.

Lazzaro, Nicole. *The 4 Keys to Fun: The Game Mechanics that Drive Play*, XEO Design Inc., 2004, accessed January 20, 2014, <http://xeodesign.com/research.html>.

Myers, Misha. 'Playing to Grow: Augmenting Agriculture with Social Impact Games', *Mobility Futures*, Lancaster University, 4-6 September, 2013.

Myers, Misha and Nina Sabnani, Anirudha Joshi, Saswat Mahapatra. 'Sustaining Stories: Storytelling in Social Impact Games', *Story Storm Workshop, Designing Interactive Systems Conference*, Vancouver, BC, Canada, June 21-25, 2014, <https://sites.google.com/site/wearestorystorm/myers>.

Pandey, Manoj K. and Charanjit Kaur. 'Investigating suicidal trend and its economic determinants: evidence from India', MPRA, 2009, accessed on March 31, 2013, <http://mpra.ub.uni-muenchen.de/15732/>.

Perkins, John H. *Geopolitics and the Green Revolution: Wheat, Genes, and the Cold War*. Oxford: Oxford University Press, 1997.

Shah, Nishant, 'Between the Stirrup and the Ground: Relocating Digital Activism', The Centre for Internet & Society, 2011, accessed February 9, 2013, <http://cis-india.org/digital-natives/stirrup-and-the-ground>.

Shiva, Vandana. *The Violence of Green Revolution: Third World Agriculture, Ecology and Politics*. London: Zed Books, 1991.