

PLAY TO GROW:

Augmenting Agriculture with Social Impact Games



PLAY TO GROW PROJECT REPORT ISSUE N°2

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Play to Grow is an Arts Humanities Research Council (AHRC) funded research project exploring and testing the use of computer games as a method of storytelling and learning to engage urban users in complexities of rural development, agricultural practices and issues facing farmers in India.

This is the second in a series of reports on the progress and findings of the Play to Grow project. The project follows on from an AHRC and British Council funded UnBox Fellowship in India in February 2013, involving a partnership with and challenge proposed by Digital Green, a non-profit organisation based in Delhi that combines technology and community engagement to improve the social, economic, and environmental sustainability of small farmer livelihoods. This report focuses on the interim findings and development of the project in the first of two workshops and meetings in India in November 2013.



New Prototype

Over the past two months the *Play to Grow* team has been working towards a primary objective of developing a playable game

prototype that can be tested and evaluated in the next stage of the project. The team met for a week-long workshop at the Industrial Design Centre at the Indian Institute of Technology Bombay, 18-22 November 2013. The aim of the workshop was to create a game that allows for storytelling and real world content based on farmer's experiences and practices, integrates Digital Green videos into game play, facilitates social interaction between players and promotes interaction between farmers and players, and is targeted at young urban adults. Out of the workshop the team devised a new game concept, mechanisms and initial content for 'Bumper Crop', a multi-player simulation board game based on farmer's lives in India that mixes strategy and chance.

Bumper Crop Concept

The objective of 'Bumper Crop' is to be the first player to complete the harvest of three crops first. To do this, players roll a die to move backwards or forwards on a game board where they land on spaces where they complete tasks to grow crops through a cycle of agro-food production. Along the board they also land on spaces representative of the kind of personal, cultural, political, environmental and economic challenges that small farmers in India face along the wider agro-food chain as a whole and that decrease or increase their resources. Players can find out more about the farming practices and experiences referred to in the game play 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.

Design Challenges

Before the workshop at IIT Bombay with the new team, Myers and Mahapatra took initial concepts for an earlier prototype, 'Crop Cycle', developed as part of the UnBox Fellowship, to the NASSCOM Game Developers Conference in Pune 15-17 November. Here our ideas were challenged and pushed further through a game design workshop with Gregg Barnett, Creative Director of Dhruva Interactive, and a closed-door mentorship with Barnett, Rajesh Rao, Founder of Dhruva Interactive, Manvendra Shukul, Founder & CEO of Lakshya Digital and Vlad Micu, Founder of VGVisionary. From these sessions we took away ideas and strategies for developing the playability and fun of our game to ensure it's wider appeal for our target audience. However, with a social impact game such as the one we are developing, an ongoing challenge is how to engage intrinsic motivation within the game in a way that balances the real world with the game world and does not trivialize the issues we want players to interact with meaningfully.



Motivating Fun

What drives a player's motivation and engagement in game play is complex and there are multiple states of fun and complementary

game mechanics that encourage these 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' ('4 Keys to Fun', Lazzaro 2004). During the workshop we explored different game concepts and mechanisms that would maximize inclusion and balance of factual or serious content, while engaging these different experiences of play. In addition to the board game platform, we also explored more quiz based game concepts, such as, '365 Seconds Survival'. This concept involved a single-player time management mechanism where player clicks on the right answer to multiple-choice questions or drags and drops the right 'ingredients' to grow and harvest a crop in 365 seconds.

One of the reasons we decided on a game board platform was that it is a familiar one that enables opportunities for all of these different engagements – for creativity through adopting roles in the simulation of real life experiences, for challenge through strategy, for social and competitive engagement with multi-player interaction and for meaningful communication of the issues through the content. Once we had decided on the simple mechanism of the board, a challenge was to include more strategy. As Bharath Palavalli from Fields of View advised that when working with dice as a core mechanic, players can often think the game is wholly reliant on chance. Bringing in more strategy not only afforded more opportunities for mastery and sense of accomplishment, but also more critical thinking, an essential element for a social impact game.

In our initial informal play tests of the game we found that even when players were losing and their level of fun and accomplishment was low, they were making the implicit narratives and different roles within the game explicit by linking their experience 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 a Punjab farmer. This experience of the contrasting roles in the game play invoked significant debates on food production in India. For example, where the prosperity of

the Punjab region of India is attributed to its pioneering of techniques introduced through the Green Revolution-- increased mechanization and intensive farming techniques using chemical fertilizers, pesticides and High Yield Variety seeds-- some have argued its effects are increased social marginalization of small farmers and harm to biodiversity, environment and health (Sen 1974, Glaeser 1987, Shiva 1991, Perkins 1997, Datta 2006).

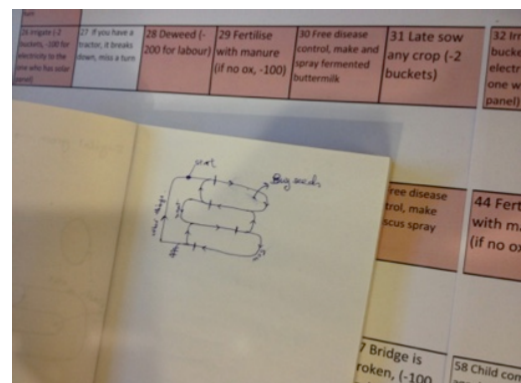
Motivation to engage actively and critically with such complex issues and debates is what we hope the game might achieve. However, it is clear that there is much more that can be done with further development of the game mechanics to invite more dialogue and challenge and less linearity in the game.

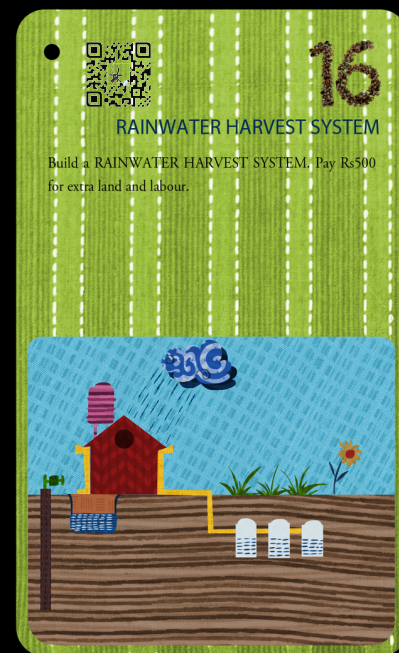


Game Mechanics

The game we've created presents us with an interesting exercise to work within the constraints of 60 board spaces. With a next iteration we

want to find ways to increase the complexity of the game within that limitation to increase the opportunities for both meaningful and challenging engagement, as well as interaction between farmers and urban audiences. We might also want to create spaces for the player to invent their own challenges and interventions, which may also provide an interesting mechanism for more dialogue and interaction. Advisor Dave Griffiths suggested we include a 'design your own space' within the game as an embedded evaluation mechanism and way to invite participatory design. This gesture towards more open source approaches is something we have included within our evaluation questions and want to take further in the next stage of the project, once we have tested how well our first version of the game mechanics are working and consider how a digital platform could accommodate such a space and work as an 'appropriate technology' within the socio-cultural context of the project (Schumacher in Varma, 2003).





The inclusion of such a mechanism within the game and an open source platform that would allow the content and ideas generated by such a space to be shared, may help us achieve one of our original aims for the game -- to facilitate more dialogue and interaction between urban players and farmers. However, there is a wide geographical and technological divide between these groups in India, with agro-food production existing primarily outside urban areas and access to internet technology primarily limited to urban areas. Therefore, the possibility of physical or virtual co-presence and interaction is a complex challenge. While our evaluations and consultations with young urban adults and farmers in the next phase of the project may provide insights on how to address this, it is something we will only be able to explore in later stages with related prototypes or other projects. However, as pointed out by one of our advisors, Katerina Psarikidou, it is worth exploring how this aspect of the project connects with an expanding field considering food relocalisation.

Another of our original ideas was to edit and repurpose Digital Green videos so that the player would interact with them directly within game play as content. However, the team found this content difficult to integrate directly without interrupting the player's flow. The editing would require abstracting content from the videos or layer other content in such a way that it would potentially lose its original impact and value as a mode of knowledge exchange and this raised ethical issues of representation in the re-presentation of this material. Instead, we decided to trial the use of QR codes embedded within the game to link to specifically selected and curated video content. In a future iteration of the prototype we may include rules that allow players to gain resources by sharing information from the videos with other players during game play.

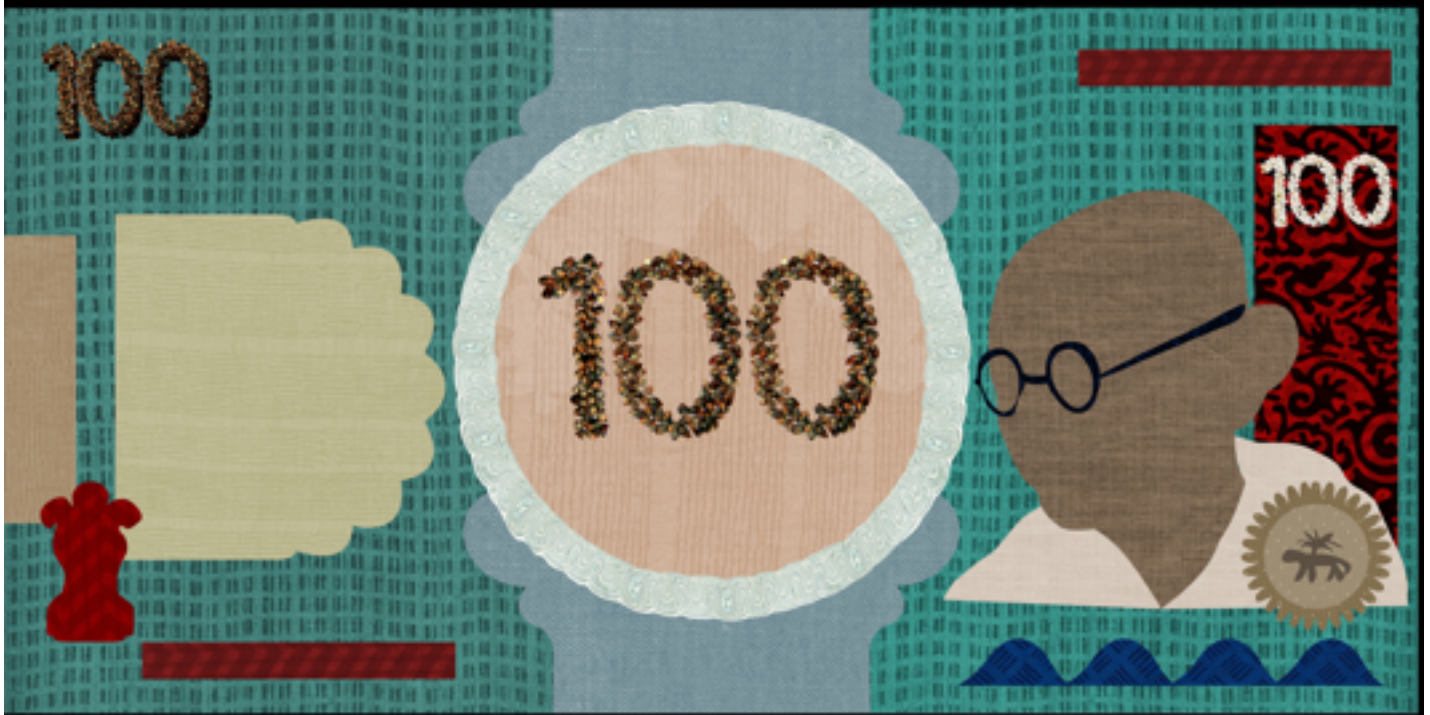
Game Production

Mahapatra and Sabnani are now in the process of finalising the visual artwork for the game equipment and preparing the final production of a paper prototype of *Bumper Crop*. As seen in the images of the game elements included throughout this report, the visual designs are constructed using real seeds and textiles to bring tangible elements of farming and reinforce our aim to incorporate real world content in the game both through textual and visual storytelling.

These ideas follow on from Mahapatra's research during the Unbox Fellowship in New Delhi last year, where he workshopped and experimented with various visual styles with a young urban audience, including: traditional Indian folk art, contemporary Indian and Western cartoon imagery, visual styles inspired from Indo-Islamic, Buddhist and medieval Indian architecture, and contemporary pop art style. Our initial idea was to use unique regional art styles to convey a visual narrative across different states in India.

For the Unbox festival, Mahapatra created a short promotional animation video that included contemporary visual content designed in a style influenced from elements of Indian medieval architecture and traditional paintings from Odia Pattachitra art. With the expertise in visual storytelling Sabnani has brought to the project and her usage of rich visual textures of fabric and seeds, Mahapatra decided on simplified versions of pop art for the drawings so that all the textures could be distinctly visible against each other and we could take a vector-style approach to the digital paintings.

The use of fabric and seeds emanates from the theme of farming in the board game. When Mahapatra and Sabnani visualized the game, they did not think in terms of textures alone. They thought of the whole theme and of everything related to it -- fields, seeds, fabric



that comes from cotton, which comes from the fields, etc. The board game is designed to simulate an aerial view of fields made from pieces of fabric sourced for the game, the numbers are made from seeds of wheat and millet. The playing pieces are wood blocks also made from wood with floral design that are stamped each time the player achieves a milestone. The sensorial aspect of the fabric adds to the notion of something tangible. Simulation of different aspects of farming reminds the player of a farmer's life visually, and hopefully, makes them identify and empathize with his/her problems, addressing one of the key objectives of the game.

Consultation & Evaluation

At the end of January, Joshi will lead the evaluation of the game at IIT Bombay with a control group of around 20 young urban adults using a mixture of Likert scale and Visual Analogue questions.

At the beginning of March, Myers will return to the region of Mahdy Pradesh where we met with farmers during the UnBox Fellowship. During this field visit she will play test the game and consult with a group of around 24 Digital Green mediators and farmers in Rajgarh to evaluate how well the game represents their experiences of farming and its value to them as a tool for transmitting and sharing knowledge and working together with other farmers. While our original target audience for the game was not the farmers themselves, this is a new direction that has arisen through the project and indicates an immediate impact of 'Play to Grow'.

Digital Green has been testing the effectiveness of their video based, community-centric learning approach within the health, nutrition and livelihood domains in a number of low-income states in India, as well as in low-income countries in Africa. The *Play to Grow* project is contributing

to Digital Green's visioning of a new service for their organisation through a Virtual Training Institute and the development of video-courseware. They have received a Learning Grant to scope the development of VTI as part of their development of strategies to get people interested in their archive and expand the range of learning processes they offer. In this respect, the organisation has found good synchronicity with the game concept we are developing in *Play to Grow* and we would like to bring these synergies together further. To this aim, we will co-produce a case study for VTI exploring the value the game, and gaming in general, has for farmers and DG mediators. We are now in the process for applying for further funding to pursue this new direction with an expanded team.

Workshop II

The team will gather together to meet for the second project workshop at IIT Bombay at the end of March to interpret the feedback from the evaluations and begin designing a storyboard and concept for a digital platform for the game.





Project Timeline

Our original timeline included presenting our project at a major social impact game conference in June. The dates for our preferred event have now moved forward to April, so we have adjusted and compressed our timeline accordingly.

January-February: Evaluations with young urban adults

March 6-7: Digital Green Workshop 'Effectiveness of ICT for Rural Development', New Delhi

March 11-12: Evaluation & Consultation with Farmers

March 21-25: Workshop at IIT Bombay

April: Report on Prototype Development

April: Writing up Evaluation of Data

April: Conference Presentation of Data

May-June: Preparing Publication Abstract

July: Submission of Publication Abstracts/Close of Project

Project Team Biographies

Dr. Misha Myers, Principal Investigator, is a performance practitioner and researcher who creates digital, participatory and located performance that engages percipients in co-production and co-presentation of knowledge to story complex social issues and geographies. She is leader and founder of Falmouth University's Articulating Space Research Centre. Her project *way from home* (2002-2008) involved partnerships with refugee and asylum seeker support organisations to explore practices and experiences of home-making through processes of walking, talking and mapping (www.wayfromhome.org). Her on-going *Walking Library* project, co-created with Deirdre Heddon, is a peripatetic library and reading group bringing together books and walking, first commissioned and carried 334km across Belgium for Sideways 2012 – a walking festival engaging the public with issues of sustainability and ecology (www.walkinglibraryproject.wordpress.com). Myers has published a number of articles and chapters about walking, locative media, and participation.

Saswat Mahapatra, Animation Consultant, is a creative entrepreneur, who has an experience of working with brands like Walt Disney Co., Cartoon Network, BBC UK, Channel 4, Cambridge University Press, Scottish Institute for Enterprises and few more. He has handled diverse responsibilities in video, print and games industry such as television promo producer, animation director, script writer, visual designer, book producer, video editor, game designer etc. He has conducted exhibitions and workshops at London, Dundee, Glasgow and New Delhi. Saswat completed his design education from Glasgow School of Art with the help of Scotland Saltire scholarship. Currently he works with DG Media College, Mumbai where he conducts campaigns, workshops and handles web and interior branding of the organisation. He runs a blog at <http://mahapatra-saswat.blogspot.co.uk/>

Dr. Nina Sabnani, Video Consultant, is a storyteller who uses film, illustration and writing to inform and enlighten her audience. Her research interests focus on exploring the dynamics between words and images in storytelling. As a filmmaker, she brings together animation and ethnography in old and new ways. Her published stories are often rich collaborations with artists and folk fablers and have earned critical acclaim. Nina graduated from the Faculty of Fine Arts, Vadodara, and received a master's degree in film from Syracuse University, NY, which she pursued as a Fulbright Fellow in 1997. Her doctoral research at the IDC focused on Rajasthan's Kaavad storytelling tradition. She taught at the National Institute of Design for 22 years before moving to Mumbai in 2006. Nina draws inspiration from her students at the Industrial Design Centre, IIT, Bombay, where she teaches and coordinates the PhD programme.

Dr. Anirudha Joshi (IIT Bombay), User Research Consultant, is Professor in the Industrial Design Centre (IDC), IIT Bombay. He works in the field of Human-Computer Interaction (HCI) design, education and research in India. Anirudha interacts with the industry regularly. He conducts open workshops on HCI for the professionals and internal training programs for companies. He is a consultant to companies and helps them develop a user-centered design approach to product development. He helps companies to integrate their internal product development processes with the design process. Anirudha's research is focussed on designing interactive products for less educated users in developing economies. He also works in integrating HCI activities with software engineering. He was co-chair of the program committee of the first India HCI 2004 conference held in December, 2004.

Advisory Panel Members

David Griffiths, Game Designer, FoAM (UK); Prof. Naomi Alderman, Game Designer, Zombie Run (UK); Tasso Stevens, Co-Director of Coney (UK); Michael Straeubig, Game Designer, i3 Games (DE); Megan Lloyd-Laney, Comm Consult (UK); Nance Klehm, Social Ecologies (US); Jen Southern, Centre for Mobilities Research (CeMoRe) (UK); Dr. Katerina Psarikidou, Centre for Mobilities Research (CeMoRe) (UK); Bharath Palavalli, Fields of View (IN); Guillaume Benoit, Head of Game Design, DSK Supinfogame (IN)

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