Interrogating Interactive Interfaces:
On balance in the evocation of environmental responsibility in the creation of Responsive Environments

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6.1 Project Overview

Audience interaction... has been an increasingly important part of entertainment over the past decade. But there’s been nothing quite as mind-bending as Emergence, a production blending science, visual arts and performance in a way that takes audience interaction to the edge. It challenges us to decide what human behaviours we most value, and, in doing so, raises questions about the ethics of science and technology.

Phillip O’Brien

*Emergence* was a large-scale three year collaboration in disparate media and mediums, which I worked on consistently from September 2004 until May 2007. The commercial, high-profile Responsive Environment was created over three iterations: v1 was staged three times over three nights in 2004 at the Balmain Hybrid Happenings Festival (Figures 5-153, 5-154, 5-155, 5-156), v2 was staged three times over two nights in 2005 at Sydney Opera

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House (SOH) Studio (Figures 6-194, 6-195, 6-196, 6-197) and v3 was staged 22 times over 20 nights in 2007 at SOH Studio; Street Theatre, Canberra (Figures 6-198, 6-199); and Arts House, North Melbourne Town Hall (Figures 6-200, 6-201). v1 and v2 were intermediary iterations, which formed a “public research laboratory”\(^{668}\) for the definitive v3. This chapter primarily concerns v2 and secondarily v3; v1 (a prototype of the concept staged alongside my StilmS)\(^{669}\) and v3 are discussed respectively in Appendix C and Appendix E. Discussion refers to a documentary film about v2 and an entire v3 staging documented in Appendix A.

The chapter begins by describing the staging of v2 from beginning to end. It then outlines my contributions and collaboration, before contextualising the art-historical framework of the work. The conclusion of the chapter evaluates v2 in light of completely overhauling Emergence in the 18 months spent making v3.

Emergence was set in 2028. It portrayed an Australian Government experiment in genetically engineered human evolution through a technologically mediated immersive environment. In the theatrical component of the experiment,\(^{670}\) which was run by the Department of Biological Sciences (DBS), attendees were invited as collective ‘Parents’\(^{671}\) to shape the socio-cultural evolution of ‘human values’ in the biologically engineered post-human Being, called Ram (Figures 6-167, 6-168). DBS consulted the attendees en masse as the last human generation before they finalised mass-scale production of their post-human Beings.

Audiences of 150-220 people experienced entire stagings together.\(^{672}\) They were chaperoned into Room Womb: an agora-like parliamentary chamber in which the stage floor became Ram’s 3D interior ‘womb’ (Figures 6-169, 6-170, 6-171, 6-172). Here they interfaced with Screen Womb, a 2D exterior

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\(^{668}\) Rokeby 1998.

\(^{669}\) Staging StilmS with Emergence v1 is discussed on p241.

\(^{670}\) The theatrical component was preceded and succeeded by two different online components in v3. They are discussed in Appendix E on p318.

\(^{671}\) ‘Attendee’ refers to everyone who attended, while ‘participant’ refers to those who voluntarily interacted with the work as a ‘Parent.’

\(^{672}\) This was similar to FoAM’s trg and Transmute Collective’s Intimate Transactions although they were designed for far fewer co-participants. These artworks are discussed on pages 153 and 157 respectively.
'womb' represented on screen\(^{673}\) (Figures 6-175, 6-176, 6-180). Together, \textit{Room Womb} and \textit{Screen Womb} comprised an encircling cube of projection screens flush on all four walls, loudspeakers in each of the four corners,\(^{674}\) responsive multi-directional lighting, a 2x2 metre raised platform in the centre of the stage (\textit{Podium}), a two metre puppet face suspended from the ceiling and fog machines (Figures 6-184, 6-185). Each screen was a portal to a corresponding filmic room in sterilised \textit{Screen Womb} where \textit{Ram} incubated while participants' votes genetically engineered him during voting sessions (\textit{Sessions}) from \textit{Room Womb} (Figures 6-177, 6-178). \textit{Screen Womb} and \textit{Room Womb} spaces and dimensions were conflated during certain scenes as the filmic space was on the far side of each screen. For example, Parents could literally interface with \textit{Ram} by tickling the screen in the scene \textit{Nurturing}\(^{675}\) (Figure 6-179) and \textit{Room Womb} was incorporated into the work by such means as being the intermediary area when \textit{Ram} on Screen North conversed with \textit{Engineer} on Screen South and when \textit{Ram} directly addressed attendees from \textit{Screen Womb}.

Production involved five actors and over 15 people running the staging from behind-the-scenes. The DBS Government Head (\textit{Head}), played by Richard Cartwright, was filmed and projected onto the puppet head suspended from the ceiling (Figures 6-184, 6-185). \textit{Head} and \textit{Ram} used live video camera feeds to see attendees from hidden film sets located outside \textit{Room Womb} (Figures 6-181, 6-182, 6-183). Two \textit{Hoster-Drones} functioned like Graham’s “dinner party host”\(^{676}\) role in Interactive Art, as they shepherded and steered audience participation in \textit{Room Womb} (Figure 6-186). \textit{Engineer} was a different ‘breed’ of post-human Being representing the ‘arms’ of the Government that shepherd and steer \textit{Ram} in \textit{Screen Womb} (Figure 6-188). \textit{Engineer} appeared solely in \textit{Screen Womb} in pre-recorded scenes. \textit{Ram}, the protagonist, was depicted through a multitude of pre-recorded and live scenes projected onto all four

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\(^{673}\) As an example of how this was conveyed, an attendee’s Feedback Form (FF42) described that this “atmosphere...felt like I walked into a womb.” The number after ‘FF’ denotes the number on the FF. FF responses were limited by the size of the form and their expeditious collection before attendees left SOH.

\(^{674}\) This was modelled on my installation design \textit{4forfour} (Figure 6-174) as described on p285.

\(^{675}\) This referred to techniques of conflating artifice and actuality in Mixed Reality and Augmented Reality approaches to creating Responsive Environments.

\(^{676}\) Graham 1997:145.
screens. Live projections were achieved by actor Nick Curnow being present at the staging in the same costume in front of the same backdrop as the pre-recorded sequences. Blending live and pre-recorded scenes created ambiguity as to what was live and what was pre-recorded when participants interacted with Ram (Figure 6-179).

Audience etiquette, consent and social and physical responsibility were articulated through hand-outs issued on arrival, including a four page program, a Feedback Form and the following mock waiver:

![DBS](Department of Biological Sciences)

**WAIVER FORM**

*Your Rights and Responsibilities as a Genetic Parent*

Becoming the parent of a new Being carries with it certain rights and responsibilities. In order that the Department of Biological Sciences can authorise this experiment to continue we ask that you please take a few moments to read over the following and sign below;

I, the undersigned, understand that:

1. All changes I design for the Being are strictly confidential and private and may not be discussed or disclosed outside of the testing area.
2. It is my responsibility to make choices that are in the best interests of the Being.
3. In no circumstance will the DBS, or its various affiliates, be accountable for any of the choices or actions that I may make.
4. Any changes I make to the Being are permanent and unalterable.
5. If the DBS deems the Being inappropriate, it reserves the right to terminate the experiment or interfere with the selection process, at any stage, and may do so at its own discretion.
6. The DBS reserves all rights for the created Being.
7. The DBS shall in no way be held responsible or accountable for any harm the Being may inflict upon myself as one of its parents, through accident or intent.

I have read and agree to all of the above:

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
<th>Gender (XX/XY)</th>
</tr>
</thead>
</table>

Authorised by B.Z. Holsi, Department of Biological Sciences, Canberra, 2328.

Figure 6-202: The waiver issued to each attendee as they arrived

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\(^{677}\) The rationale of doing so is discussed below on p264.
Emergence began passively by presenting the socio-cultural setting, the background story of the experiment and the DBS rationale in soliciting attendees to engage with their experiment “to build a responsible moral citizen fit for our new society.”

Raising a Being pre-disposed to seek autonomy required Parents to make a series of choices about aspects of his ‘personality’ or ‘character’ over the course of the staging. In one such instance Parents had to vote for Ram to have free will (including being disobedient) or for conditioning him to be more obedient. Voting to respect Ram’s desire for free will meant accepting unknown consequences, while controlling him imposed nurture over his nature.

As Ram became increasingly socially conditioned, attendee’s interaction with him and with Head increased proportionally, as participants became progressively involved with the work and one another. This structure mapped passive-to-interactive attendee involvement to Ram’s emergence from nascent embryo to socialized adult. In so doing, attendees’ influences’ became more multifaceted through diverse interactivity, commencing with individualised, nuanced and intimate interaction (referred to as Qualitative Interactivity) which was then combined with voting interactivity (referred to as Quantitative Interactivity).

Artwork-Audience interaction was progressively more technologically mediated until the climax (Finale) returned to ‘naked’ intimacy, when Ram literally emerged through a slitted projection screen and walked onto Podium (Figures 6-203, 6-204, 6-205). His emergence from the illusory (Screen Womb) into the physical realm (Room Womb) confronted attendees with ‘here-and-now’ responsibility for their creation, with attendees’ last interaction being to decide if he lived (by being released into society) or was reset by the DBS (as a euphemism for being killed) (Figures 6-206, 6-207, 6-208). Concluding with live unmediated human-human interactivity

Mark Bolotin and Josh Wodak. ‘Synarcade Collective Application to Australia Council for the Arts.’ 2005:11.

These conundrums also expressed the internal structure of the work, regarding the balance between its’ indeterminate form (as ‘nature’) and the determinate form as controlled by Parents (as ‘nurture’).

Qualitative and Quantitative denote the basis of the interactivity, as there were quantitative and qualitative dimensions to all interactivity. As an example, voting was principally quantitative although qualitative assessment of voters’ behaviour also affected the vote tallying.

Resetting (i.e. killing) Ram and Punishment referred to Mike Parr’s Kingdom Come and/or Punch Holes In The Body Politic. Bolotin was at my encounter with this artwork described on p42.
represented attendees’ shared humanity converged with the emergent humanity of their Being.

Figures 6-203, 6-204, 6-205: Ram emerging through a projection screen (v3). Photography by Jess Klingelfuss.

Figures 6-206, 6-207: Voting to Release or Reset Ram (v3). Photography by Jess Klingelfuss.

Figure 6-208: Ram emerging onto Podium (v2). Photograph by Zoltan Deak.
6.2 Contributions and Collaboration

Six key members of Synarcade, a Sydney based multi-arts collective, had responsibility for concept, content and context. Members of Synarcade had collaborated since 2000, including on Kali Yuga v1 and StilmS v1, however Emergence was unprecedented for Synarcade in scale, complexity and interactivity. More than 70 people worked on the three iterations, although over 50 had minor roles, such as assisting with production and staging. As one of only four key creatives involved in the entire timeline of Emergence, my contributions were second only to Bolotin, the Director and principal Writer.

In collaboratively created Responsive Environments particular personnel may focus on the ‘in-between’ of the content and context. With Interaction and Interface Design my main v2 and v3 contributions, I was intermediary between all departments and between co-creators and audiences. As Interaction and Interface Design connected all project parts together and the attendees, I collaborated and contributed to all departments, with my Designs incorporating such areas as Music, Costume Design and Production Design in the specific areas listed below. As an example of how this influenced my other contributions, my concept and writing contributions focused on balancing large group interaction while retaining discernable narratives that

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682 See p185.
683 See p210.
684 The credits for the v2 cast and crew are: Director: Mark Bolotin; Producer: Michelle Tabone; Associate Producers: Sarah Muirhead & Alex Weltinger; Assistant Director: Philip Wood; Written by: Mark Bolotin, Josh Wodak, Richard Cartwright, Ian Shoebridge, Philip Wood; Director of Interaction and Interface Design: Josh Wodak; Director of the AudioVisual Media System Design; Josh Wodak, Multimedia Coordinator and Lead Audiovisual Operator; Josh Wodak; Audiovisual Operators: Harriet Birks, Heidi Cox, Talbet Fulthorpe, David Watts, Richard Schweizer; Live Cameras: Philip Wood; Film Documenter: Zoltan Deak; Graphic Designers: Breanne Squires & Sarah Muirhead; Publicist: Geoff Sirmai; Starring: Nick Curnow, Gary Boulter, Richard Cartwright, Madeleine Boyd & Leah, Romy Bartz; Art Director: Mark Bolotin; Production Designer Film: Madeleine Boyd; Production Designer Theatre: Ana Deak; Costume Design: Madeleine Boyd & Ana Deak; Prop Makers: Madeleine Boyd, Ana Deak, Zoltan Deak, Martin Donaldson, Monique Donaldson, Mila Gisbert, Marty Hallinan, Elaine Lee, David Mills, Angie Orrego, Richard Schweizer, Carlos Santos, Charlie Shelley, Janna Smoliar, Troy Zarb; Make-up: Kerrie Allott & Raizel Carringal; Film Assistants: Greg Bigelow & Sibylle Meder; Music Composition: Alon Ilsar (Foley) and Gauche; Continuity: Michelle Bagtas; Sound Recordist: Richard Schweizer; Scientific Animations: Stephen Hicks; Flash Animation: Harriet Birks.
engaged audiences in the complex form and content. This related to my technique of creating with audience perspectives in mind, as used by Rokeby,\textsuperscript{685} Penny,\textsuperscript{686} Willis,\textsuperscript{687} and Feingold.\textsuperscript{688} Of the following contributions, the first four were v2 and v3 Pre-Production roles and the fifth was my v2 Production roles.\textsuperscript{689}

6.2.1 Project Development, Concept and Script Writing

For the key creatives pre-production was ongoing since v1 in November 2004, due to the continuity with v2. Concept and script writing throughout 2005-2007 was through extensive collaboration between Bolotin, Cartwright, Wood, Ian Shoebridge and myself. Having collaboratively written film, theatre and performance scripts together since 2000 we were all were cognisant of one another’s’ respective strengths and interests.\textsuperscript{690} As Bolotin and I were the only writers who had previously made interactive artworks, we concentrated on writing the narrativity with inseperable interactivity. We wrote individually, in pairs and all together, co-developing the concept and subject matter and co-writing themes, stories, subjects, characters and narratives. In contrast, the following were all areas I directed and largely authored myself as they were outside the experience of all collaborators other than Bolotin.

\textsuperscript{685} See p136.
\textsuperscript{686} See p107.
\textsuperscript{687} See p82.
\textsuperscript{688} See p84.
\textsuperscript{689} Considerable contributions were also made to project management (grants, financing, budgets, organising personnel) and all the technical dimensions, but these are only touched upon as they are outside the scope of this dissertation.
\textsuperscript{690} These artworks and roles and responsibilities are listed on Appendix B: Curriculum Vitae.
6.2.2 Directing Interaction and Interface Design

In this area I directed:

1) The concepts, methods, and procedures for immaterial audience interaction and material audience interfacing
2) The mechanical, computational, spatial, temporal, logistical and physical features of interaction and interfaces
3) The communication protocols for translating all audience interaction for the purposes of designing the procedures for cast and crew to run the work.

Realising my Designs required a cohesive team with highly specific skills and a lot of available time. While Bolotin declared each Department would have a Director leading a team in April 2005, he and the Producer, Michelle Tabone, drastically reduced Interaction and Audiovisual Media System (AVMS) budgets in June 2005. Consequently I could not offer financial remuneration to recruit personnel or implement my nominated Designs, so I postponed them till v3. Between May and October 2005 I received informal feedback from Keir Smith, Somaya Langley and Mark Havraliv as Interface Design Consultants, owing to their experience staging similar artworks. Their invaluable feedback was limited by not formally being in the project and their available time. Consequently, I only used production personnel recruited a month before v2 was staged, rather than a pre-production team.

6.3.2 Directing the AVMS Design

The AVMS controlled all pre-recorded, live, pre-sequence and live-sequence multi-channel speech, music and video through personnel operating six laptops running Arkaos software, six projectors, two live cameras, two microphones and a sound mixing desk. As an example, it seamlessly blended pre-recorded speech and music with unscripted

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For v3 I designed a considerably more complex and sophisticated AVMS based in Isadora. It required 2 operators, rather than the 6 required for the v2 AVMS so was suitable for national touring.
conversations between participants, *Head* and *Ram*. The AVMS incorporated elements of the Interaction Design, such as fading in and out coloured lights to indicate which quadrants were active during *Sessions*.

In this area I directed:

1) Translating all media types into a format operated by the minimum of people
2) The mechanisms and protocols of software and hardware infrastructure and technology for sequencing, running, triggering and manipulating all audiovisual media, including the platforms and configurations of all associated equipment
3) Researching all available computer platforms to produce the most suitable software and hardware configurations and the software programming by which audiovisual media is sequenced and controlled within the software and hardware infrastructure
4) The mechanical, computational, spatial, temporal, logistical and physical procedures for installing, operating, transporting and running the AVMS
5) The Information Architecture by which the work is structured, organised and operated
6) The methods and processes of communicating between the Interfaces and the AVMS.

### 6.2.3 Technical Director

In this area I:

1) Determined the overall technical design, configurations, requirements and technical operation of the work
2) Established the communication protocols, working methodology, technical requirements and schedules for everyone in the Technical Department, AVMS Department and Interface Department.

As *v2* was produced with the forethought of touring *v3* around Australia, Technical Direction incorporated all the logistics for making the work so it could be toured, including automating the behaviour of the work so
the Interface System was programmed to directly control the AVMS, which in turn controlled all pre-recorded media through *Isadora* software in real-time.

### 6.2.4 Multimedia Coordinator and Lead Audiovisual (AV) Operator

As Lead AV Operator during production, I directed a tightly functioning unit of humans mimicking what machines would have done in my proposed Interaction Design. I coordinated all audiovisual media in dialogue with changes in props, stage actions and costumes throughout each staging by giving frequent instructions via a CAM System to: three assistant AV Operators, *Head* Camera Operator, *Ram* Camera Operator, *Head, Ram*, Projector Operator; SOH Stage Manager; *Synarcade* Stage Manager; Lighting Operator and Sound Operator (Figures 6-209, 6-210, 6-211).

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692 See p268.
6.3 Content and Contextualisation

In a world where the idea of living out your days as an avatar in Second Life...is not so out of this world, the traditional play may be a dying art form. Synarcade Audio-Visuals is embracing the new while taking cues from the old with Emergence, a theatrical choose-your-own adventure for the future.

Kat Harley

Being a hybrid performance, installation, theatre, and social-scientific experiment, Emergence drew from diverse artforms and mediums as it embraced “the new while taking cues from the old.” As an example of this ‘in-betweeness,’ science-fiction, surveillance and political dimensions referred to such literary works as Aldous Huxley’s Brave New World, George Orwell’s 1984 and Anthony Burgess’ A Clockwork Orange, while the game-like qualities of Emergence satirised and parodied futuristic dystopias. The range of artforms drawn upon included narrative-based interactive installations, interactive artworks involving RFID/Barcoding/IRDA, and Alife science+art regarding emergence and evolution in biology and Complexity Sciences. The following only briefly contextualises Interaction Design, as the entire art-historical contextualisation would occupy a whole dissertation. Resonances
with artworks in this dissertation, such as the relationship between the character Head and Stelarc’s Prosthetic Head and the Punishment modality with Parr’s Kingdom Come and/or Punch Holes In The Body Politic are interspersed throughout.

In relation to Alife science+art, Emergence used theatrical mimesis of self-organising and self-perpetuating Alife art, via actors and crew manually running all technical and non-technical aspects. In contrast to general Alife and Generative Art where the only humans in artworks about biological and/or computational evolution are the audience, Emergence did not forego ‘the human’ as it was about humans with flesh-and-blood humans. As all the characters were ‘post-human,’ inter- and intra-species responsibility were evoked by mutualistic attendee-artwork relationships and cooperative attendee-attendee relationships (in biological terminology). Alife techniques of ceding control to semi-autonomous artworks that manifest uncontrollable properties were employed in principle, as the large number of simultaneous participants prevented employing them in form so as to retain cogent narrativity. This stemmed from ‘simplifying’ emergent and swarm behaviour as a critique of the lowest common denominator basis of democracy, since attendees were less likely to understand their myriad influences on the work if it responded with complex indeterminate behaviour. Accordingly, balance was achieved through facilitating engaging and accessible interactivity for the maximum number of attendees, with more complex voluntary influences offered through Qualitative Interactivity. As an example, Ram attempted to take control over the experiment from his creator, the DBS, subject to whether Parents voted to grant him this power or not. Such Quantitative Interactivity was augmented by the Qualitative Interactivity of Interrogation, when any participant could engage Ram in one-on-one dialogue, including interrogating him about his request to be granted the power to take control over the experiment.

Interrogation highlights the Alife inspired Inside-Outs ide confl ation, with attendee and artwork interacting over the permeable interface membrane between Room Womb and Screen Womb. To evoke responsibility across these membranes I applied Weibel’s principles of “collective interaction” and causal relations between these worlds, whereby an audience
does not stay external observer as with film but as internal observer he is going to
take part in the image-worlds and thereby is going to change them. His entry into
the image-world is going to trigger reactions in the sense of the covariant model
not only in multiple parallel image-worlds but also in the real world. The relation
between image world and reality is going to be multiple and reversible. The
observer himself becomes the interface between an artificial virtual world and the
real world. The events in the real world, controlled by the internal observer, are
going to affect the virtual world, and the events in the virtual world, also
controlled by him, are going to affect the real world and parallel virtual
worlds...interactions by the observer between himself and the image world will
become bi-directional. A cause in the real world will have an effect in the virtual
world and, reversibly, a cause in the virtual world will have a effect in another
parallel virtual world or in the real world.\textsuperscript{701}

As an example of embodying these ideas, participants caused cumulative
‘virtual’ influences on \textit{Ram} in \textit{Screen Womb}, but were confronted by \textit{Ram}
emerging into \textit{Room Womb} in \textit{Finale} when they voted to kill or release \textit{Ram}.
This exemplified how \textit{Emergence} theatrically applied Alife ideas, such as those
of Peter Cariani, a founding Alife scientist, who argues “the key features of an
emergence-capable device are openness to the environment – the ability to
measure or effect changes in the outside world – and a capacity for adaptive
self-alteration.”\textsuperscript{702} These features were explored in \textit{Ram}’s awareness of \textit{Room
Womb} and his adaptive self-alteration in persuading his Parents to make him
more like them to fit in with this “outside world.”

My techniques of \textit{Intact Syntax} and Arpeggiated \textit{Hierarchy}, which were
introduced in Chapter 2,\textsuperscript{703} were used to combine content, form and Interaction
Design to balance the binaries of authority-control, determinacy-indeterminacy,
simplicity-complexity and narrativity-interactivity. As an example of how \textit{Intact
Syntax} was applied, the narrative-interactivity trade-off required relatively large
primitives in a predominantly pre-determined structure for \textit{Emergence}, as Blife
art, to denote emergent processes being theatrically enacted rather than
embodied in the form (Figures 6-212, 6-213). This modeled Jorge Luis Borges

\textsuperscript{701} Weibel 2002:43.

\textsuperscript{702} Peter Cariani. ‘Emergence and Artificial Life.’ In \textit{Artificial Life II}, edited by Christopher Langton and Sam

\textsuperscript{703} See p93.
The Garden of Forking Paths\textsuperscript{704} rather than Espen Aarseth's ergodic\textsuperscript{705} and hypertext approaches to interactivity-narrativity relationships as their readability is not suited for so many participants (Figures 6-214, 6-215, 6-216). A structure built on forking paths also formed the solution to interactivity-narrativity trade-offs as Cameron argues:

To write not... a whole series of ‘what-ifs’ increases both the volume and complexity of an author’s task exponentially. Interactivity implies forking paths and each pathway must be written and fitted together. The greater the number of pathways, the greater the sense of textual play for the reader, and the greater the amount of work for the writer. The volume of story web increases exponentially with additional points of interaction. An author is faced with an inevitable and depressing tradeoff - sacrificing time spent on the texture of the narrative, its literary or cinematic qualities, for an enhanced interactive complexity. The result can be interactive but schematic, resembling the outline of a story rather than the story itself.\textsuperscript{706}

With 150-220 simultaneous ‘readers,’ excessive choice of pathways increased the probability of getting lost in the “volume of story web.”\textsuperscript{707} The solution to embracing Cameron’s “interactive complexity” and “the cinematic qualities” of the narrativity was evinced in the tagline. ‘Build Your Own Being’ referred to how Emergence employed a similar structure to the Choose Your Own Adventure book series, with Ram’s genetic alterations as narrative bifurcations occurring at pre-determined junctures (Figure 6-212).\textsuperscript{708}


\textsuperscript{706} Cameron 1995b.

\textsuperscript{707} The solo readership format of Choose Your Own Adventure was only loosely applied to the group readership of Emergence as the ownership of ‘your own being’ was rhetorical: How can you choose your own adventure when everyone is sharing the same adventure? How can you build your own being when everyone is building the same being?

\textsuperscript{708} Based on attendees’ responses to the v2 binary structure, v3 harnessed my ternary and quaternary narrative structures designed for v2 which were then used in some v3 Sessions. These can be seen on Part 8 and Part 11 of the documentation of v3 in Appendix E.
Despite employing Cameron’s above model, *Emergence* significantly departed from his conclusion about this “apparent disjuncture between the nature of interactivity and that of narrative.” Cameron reasoned that the moment the reader intervenes to change the story (at the nodes of multi-linear narrative or at every moment in a spatio-temporal simulator) is the moment when
the story changes from being an account of events which have already taken place
to the experience of events which are taking place in the present. Story time
becomes real time, an account becomes an experience, the spectator or reader
becomes a participant or player, and the narrative begins to look like a game.\textsuperscript{709}

This challenge was surmounted by using multifarious interactive modalities
which incorporated \textit{Emergence} as a game and through conflating moments
when \textit{Ram} was pre-recorded and live, so attendees were unsure if they were
participating in Cameron’s “story time” or “real time.” Such conflation was
exemplified by invoking Kac’s “dialogic principle” in the scenes \textit{Interrogation},
\textit{Punishment}, and \textit{Finale}\textsuperscript{710} which “requires the use of bidirectional or
multidirectional media and the creation of situations that can actually promote
intersubjective experiences that engage two or more individuals in real
dialogic exchanges.”\textsuperscript{711} As an example, \textit{Ram}’s responses in \textit{Interrogation}, while
all live, were intermittently cryptic and unrelated to the questions, which
attendees found ambiguous and confusing as to whether a large data-set of
pre-recorded responses was being selected in real-time response to the
questions (Figures 6-217, 6-218). This responsivity modelled the Turing Test in
Artificial Intelligence, regarding convincing humans they are conversing with
another human when they are actually ‘conversing’ with a machine, and to
‘dialogical’ Interactive Art, such as Stelarc’s \textit{Prosthetic Head}\textsuperscript{712} and
Courchesne’s \textit{Portrait One} (1990). Unlike machine-simulated responsivity in
\textit{Prosthetic Head} and \textit{Portrait One}, responsibility in \textit{Interrogation} was to a live
performer, who, unbeknownst to attendees, would continue responding to
them when he emerged from Outside into Inside during \textit{Finale}.

Inside-Outside relationships also evoked the socio-political dimensions
manifested in \textit{Sessions}, which explored democracy-technology relationships in
anonymous versus monitored electronic voting (Figure 6-77).\textsuperscript{713} Conflict and

\textsuperscript{709} Cameron 1995b.
\textsuperscript{710} Described below on p282.
\textsuperscript{711} Kac 2004.
\textsuperscript{712} As discussed on p69.
\textsuperscript{713} This was informed by my research into diverse historical and contemporary democracies internationally,
historical and contemporary methods and technologies for analogue, electro-mechanical, electronic and digital
democratic voting and by my experience as an election official at Australian Local, State and Federal Elections
and Referendums since 1998 and as an Australian Census Officer in 2001.
resolution in society-at-large were expressed within the work’s microcosm of “a technically feasible experiment in synthetic sociality”714 which created “imagined communities”715 between allied voters. Spatio-temporally partitioning the parliamentary floor agora during and between Sessions created porous boundaries between public versus private space, such as the participants in Figures 6-217 and 6-218 below who performed on the spotlit Podium before returning to the ‘anonymity’ of the shadowed crowd. This was achieved by my Designs involving Parents as politicians debating in the future (police) state parliament while reifying consumer choice rhetoric inherent in the DBS’ market research like manner of soliciting votes.716

Figures 6-217, 6-218: Interrogation with Ram and Head (v3). Photography by Jess Klingelfuss.

Figure 6-77: Elizabeth Bentley’s Drum Media review, 28 August 2007.

In this regard, Emergence was contrary to dominant approaches taken by Interactive Art which are not reflexive about (arguably) intrusive and

714 Penny 1996a.
716 I drew on Interactive Art that addresses surveillance and democratic participation, including Track-The-Trackers (2003) by Bigbrother Awards (www.t-t-trackers.net), Accessed 13 March 2007, and the artworks mentioned in Footnotes 677 and 678 above.
unsolicited surveillance. Soliciting voting was self-reflexively incorporated into the futuristic police state running the experiment, to acknowledge and parody the DBS’ intrusion into voters’ privacy. Head informed attendees the DBS was conducting a form of ‘market research’ into their values on the Governmental rationale of protecting citizens by spying on them. Requiring information about attendees was presented under the pretence of ‘the more you tell us about yourself, the more we can tell you about yourself.’ Head and AV Operators surveyed and assessed participants’ behaviour during anonymous Qualitative and Quantitative Interactivity, as a complex system was not warranted for the three stagings of v2.

Emergence related to, but was also contrary to, voting-based “interactive movies,” such as Raduz Cincera’s Kino-Automat (1967) (Figures 6-219, 6-220, 6-221). This work, which was “a satire of democracy” like Emergence, was particularly relevant, as in it the audience can decide - at certain moments - the way in which the story is to proceed by a majority vote, using push-buttons connected to an electronic voting system. Unfortunately, the voting takes place only at certain crucial points, which are over-determined by multiple forms of direct address.

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717 This referred to then current debates about the Howard Government introducing Sedition Laws and a national SmartCard system. However resonances with Government Industrial Relations and Sedition reforms were subliminal, so as to not temporise the futuristic setting.


719 Huhtamo 1995c.
In contrast to Cincera’s work, which “proceeds from a traditional narrative position which does not acknowledge the presence of the audience,” interactivity in *Emergence* was intrinsic rather than extrinsic, such as *Ram* directly addressing attendees to persuade them to alter him to have more free will. Nevertheless, Interaction Design still faced the challenges in “more recent systems” to Cincera’s, where “audience participation’ still depends on majority decisions” despite having “achieved more developed interfaces, a wider variety of alternative storylines and branching points, and a more seamless experience.”

Huhtamo reasons this occurs since “it is difficult to introduce intelligent multi-person interactivity into a situation in which a traditional audience sits in an auditorium.” The way in which *Emergence* avoided combining such “multi-person interactive cinema…with a 19th century idea of public spectacle and the audience” was by avoiding Cincera’s stationary and remote electronic voting and instead encouraging attendees to move around the seatless stage floor to vote.

*Emergence* was unique relative to the artworks and interactivity discussed in this dissertation, due to the responsivity and responsibility evoked in such numbers of participants. The quantity-quality trade-off in Interactive Art is between smaller numbers of participants permitting “‘broad bandwidth’ of interaction” while larger groups generally engage through trammeled interactivity (such as multiple choice voting to trigger pre-determined sequences) if narrativity is retained. In this regard, *Cinematrix Interactive Audience Participation Technology* exemplifies the trade-off that *Emergence* sought to avoid: this binary vision recognition system reduces all participants to absence/presence, by which various computer games or electronic voting can be undertaken. How *Emergence* augmented such binary voting and structures with wide bandwidth interactivity that balanced multifarious narratives for 150+ simultaneous participants is discussed in the following section on Interaction and Interface Design.

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720 Huhtamo 1995c.
721 Huhtamo 1995c.
722 Huhtamo 1995c.
723 Rokeby 1990.
6.4 Interaction and Interface Design

What is not a common phenomenon is interaction between strangers... It may be that in aiming to encourage interaction between people in general, interaction between strangers is rendered more possible. It might be interesting to examine any interactive computer based artwork which has a stated aim of interaction between strangers... to see if this phenomenon can be achieved more frequently by certain tactics.

Beryl Graham

My 16 diverse Interaction Designs used “certain tactics” to encourage “interaction between strangers” and the artwork through diverse modalities and mediums. As discussing all Designs would occupy an entire dissertation, the following only briefly outlines my criteria and contextualisation for Designs and the v2 implemented Design. The following aspects of Interaction Designs were conceived for v2, before comprehensively overhauling Interaction Design for v3. Three examples from my v3 Designs in Appendix E demonstrate this aspect of project development and response to evaluating v2.

Over 2006-7 a national tour was organised for v3. 22 regional, remote and metropolitan venues around Australia nominated to host Emergence for full theatrical seasons. This was organised through the competitive rounds of applying for assistance from Playing Australia, a national Government body that assists in national tours of Australian performance arts, and Performing Lines, an Australian NGO that produces national tours of Australian performance arts. While Emergence was short-listed, it was not eventually selected, so three theatrical v3 seasons were organised independently. v3 Designs were conceived and developed in the context of the variable funding that would become available through the number of venues toured to. In this context, v3 Designs sought sophisticated, detailed, robust and accurate biometric, Demographic and Psychographic (DaP) information in an automated system that analysed every vote from every voter from every staging to reflect back cumulative patterns of different peoples’ preferences, whereby “as the show travels across Australia, the choices the audience makes are collected to

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examine the difference between audiences and demographics.” DaP information was discussed in the free public forums following the last staging in the v3 seasons in Canberra, Sydney and Melbourne and on the web component of Emergence. These forums discussed the meta-patterns of attendees’ votes and Beings built within and between each staging and each season.

All Designs concerned context- and content-appropriate interactivity for evoking indirect, direct, literal, metaphorical, instantaneous and cumulative responsibility to the social and physical environment of the artwork. To do so, I conceived interactivity as a vast cybernetic network of inputs and outputs connecting 150+ participants interacting via diverse interfaces that exerted multifarious influences (Figures 6-179, 6-180, 6-181, 6-182, 6-222, 6-223). Inputs included all attendees’ interactions with one another and the artwork via direct, one-on-one, instantaneous, delayed, cumulative and group interactivity. Outputs included all responses from live actors, live and pre-recorded audiovisual media and responsive lighting. Cybernetic loops ranged from direct one-on-one dialogical interactivity, such as Interrogation and Punishment, through to mass voting for relatively deterministic AV sequences. Functionality was through the Interface System of electrical engineering and computer programming to translate volumetric, tactile, spatial movement and auditory data that flexibly influenced Outputs. Interface Design concerned the form: the architectural structures of mounting the AVMS and Interface. Functionality and form were designed in tandem, as they required one another.

Designs collectively formed a combinatorial matrix with Interaction Design as the Rules of the game and Interface Designs as the Tools by which it could be played. The following only lists voting procedures, as my Tools for Qualitative Interactivity are beyond the scope of this dissertation. Having been iteratively designed, each Tool was then assessed by professional computer scientists, mechanical engineers and electrical engineers.  

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727 For v3 I Directed the following crew members as part of Directing Technical, Interface and AVMS Departments: Technical Touring Manager (Kallum Wilkinson); Interface System - Electrical Engineering,
assessment, which is also beyond the scope of this dissertation, included how to ensure each method was safe, intuitive and expedient; limit cheating; accurately assess and process voting numbers; and facilitate movement of voters during Sessions. The following Designs denote voters’ voting methods in ascending order of sophistication, technological complexity and cost:

1) Depositing plastic tokens in an abacus like kinetic sculpture/ballot box protruding from ‘Podium.’ Attendees are assigned one token per ‘Session.’ The weighing scale arms reflect which quadrant has the most tokens.

2) Manually inserting cardboard punch-cards into terminuses, creating ‘score card’ like records of each voters’ votes. Anachronistic electromechanical devices calculate the number of cards punched.

3) Depositing magnetic tokens in floor and/or ceiling mounted terminuses that emanate out from ‘Podium’ and/or projection screens. Computers assess quantity of tokens according to strength of magnetic charge on each terminus.

4) Holding colour coded glow sticks in corresponding quadrants. Video cameras mounted in the ceiling give a visual feed to computers which assess quantities of corresponding colours in corresponding quadrants.

5) Sending votes via Bluetooth on mobile phones or PDAs to sensors positioned in respective quadrants.

6) Measuring electric charges in bodies by voters wearing hardware sensors on their hands which they connected to one another by holding hands.

7) Biometric retinal or fingerprint scanning in floor and/or ceiling mounted terminuses that emanate out from ‘Podium’ and/or projection screens.

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728 I designed these for v2 but they became slated for v3. My extensive designs of Tools, Rules, Interface Systems and Interface Designs are discussed in Appendix E as their specificities are beyond the scope of this dissertation.
8) Wearing a theatrical costume as a bracelet, necklace, sash or vest with Barcode, SmartCard, RFID, Magnetic Electronic ID Tag or IRDA embedded in the costume. Voting involves bringing the costume into range of readers embedded in floor or ceiling mounted terminuses that emanate out from ‘Podium’ and/or projection screens.

The cost and complexity of these Tools were considered in light of the above mentioned tour. As these venues had highly different interior idiosyncrasies, 3) and 8) required the following Centrifugal Architectural Sculpture (CAS) (Figures 6-222, 6-223).

CAS, which also stands for Complex Adaptive System, is a literal and symbolic centerpiece that embodies the DBS’ ‘Central Data Processing Centre.’ The self-contained structure performs vital functions of mounting and suspending all projectors, loudspeakers, amplifiers, lighting and Interface hardware. The spatial and visual form is as unobtrusive as possible, while leaving all floor space unobstructed so attendees move around unencumbered. Voting terminuses collate data centrifugally, from periphery-to-centre. This draws on politico-economic centripetal distribution, such as translating voting and referendums into centrally emanating laws and policies. Such information flows from periphery-to-centre when soliciting votes. This data is physically and metaphorically collated in the centre and translated into media broadcast back to the periphery as speech, music, video and lighting. This mockingly responds to preferences, since the possibilities are largely predetermined. Such a “vending machine”\textsuperscript{729} overtone parodies the relationships between Pavlovian Interactive Art and the capitalist worship of consumer ‘freedom’ via multiple choice.

\textsuperscript{729} Feingold 2002.
In tandem with these Tools, Rules for Quantitative Interactivity included:

1) Limited versus unlimited voting:
   limited voting restricts the number of times participants vote, for instance allowing voting in four of the seven ‘Sessions,’ to encourage strategising about using ones’ votes. Automated systems, such as Tool 2) (listed above) are programmed to restrict voting in particular ‘Sessions’ of categories of voters, while the other manual systems use surveillance from ‘Head,’ ‘Hoster-Drones’ and AV Operators.

2) Anonymous versus monitored voting:
   in anonymous voting nothing connects voters’ identity and their votes, while monitored voting assigns everyone a Unique Voting Identification (UVI) through Tools 7) or 8) (listed above).

3) Using Rule 2) to vote according to DaP profiles and categories:
   significantly increases the range of Rules, such as allowing voting by DaP categories in different ‘Sessions’ and having people in the same DaP category vote against one another for different options.

4) Bartering votes:
   within limited voting, voters exchange their ‘voting rights’ with other voters to vote for particular sessions. Allotments of votes are electronically administered in Rule 3) while other manual systems use such techniques as exchanging physical voting tokens.

5) Privileges and hierarchical power differentials between voters:
preferential systems allow people returning to have different privileges, such as votes which count for more and voting more often than those attending for the first time. This encourages multi-faceted engagement by participating in successive stagings.

6) Gradations of voting strength:

voters count as numerical values between 1 and 10 according to degrees of agreement-disagreement, where 10 = maximum and 1 = minimum strength of vote. ‘Room Womb’ is spatially categorised by voting strength, such as terminuses nearer ‘Podium’ are 10 points while terminuses nearer projection screens are 1 point. This system can be further used to vote for degrees of change of ‘Ram’s’ genetic alteration, so rather than being “Logical” or “Creative” he becomes a mix of both depending on the strength to which voters’ vote for both options.

7) Proportional representation versus might-is-right:

proportional splits influence sound and lighting to represent consonance or dissonance. Close margins create turbulent influences (to reflect such disagreement between voters) and landslides create harmonious influences (to reflect overwhelming majority consensus). In keeping with ‘Intact Syntax,’ these influences do not affect the narrative functions of pre-filmed scenes.

8) Multi-tiered and multi-platform Sessions:

‘Sessions’ contain multi-tiered options to control more subtle and influential decisions. For example:

Session 2, Decision 1: Option A or B? (B wins).
Session 2, Decision 2: Option B or C? (C wins).
Session 2, Decision 3: Decide between the winner from Session 2 Decision 1 and Session 2 Decision 2: B with C (‘Ram’ receives proportional combination of both modifications) or just B or just C.\(^{730}\)

\(^{730}\) This was inspired by Karl Sims, an Alife artist who is discussed on p102. His article ‘Second Choice Voting’ recommends to “create a cycle of preferences, such as: A defeats B, B defeats C, but C defeats A. This should not happen often in practice, but in case it does, another method is needed to select the winner from the subset of candidates in that cycle.” Karl Sims. ‘Second Choice Voting.’ Karl Sims Website. www.karlsims.com/second-choice-voting.html. 1999. Accessed March 17 2005.
As discussing each of these Tools or Rules in detail is beyond the scope of this dissertation, the following summarises my rationale for applying any of the above Tools or Rules to a ternary structure, which was implemented in v3:

**Two-party-preferred** voting polarises voters into two parties. While analogous to male-female parenting and two-party democracy, it detracts from the appeal of voting and limits engagement with ‘Ram’ since less choice means less chance voters develop stronger inclinations for any one option. This encourages interaction by implicating participants more in voting. Having three or four simultaneous options counteracts the rigid binary structure by exploring subtlety, nuance and indecision between more diverse options. This is evoked by deciding between trajectories with multifarious repercussions: a voter likes Implication B that stems from Option A but vehemently disagrees about Implication C (which also stems from Option A) so they ‘choose not to choose’ or vote for another option. Invoking agreement with some elements within the one option evokes subtlety within binaries. Such decision making encourages internal conflict within individuals and between groups.

In tandem, a wide spectrum of possibilities allows greater identification with the work, as offered options may resonate more with attendees’ values. Ternary systems can produce complex tripartite interplay without a balance of power. Using game theory, each decision has relative superiority over the others, avoiding unequivocally favourable options, like Paper-Scissors-Rock, so voters debate relative merits while negotiating ‘Yes’, ‘No’ or ‘Maybe’. As an example, when presented with “All Freedom-No External Control” or “No Freedom-All External Control” for ‘Ram,’ the ‘middle-ground’ option is “Some freedom, subject to external control.” ‘Protest’ options destabilise the balance of power between the ‘dominant parties.’ In this example of free will versus determinism, Option Three can veto the vote by instilling ‘Ram’ with neither. This leads to a different path altogether where ‘Ram’ is subject to neither free will or determinism. This offers less predictable narrativity derived from unanticipated consequences from rejecting the dominant options. This models the dynamic between the Liberal Party, Labour and the Greens in Australian Parliament. The Greens, rather than expecting victory, counteract the polarised options of Labour and the Liberals.
This tripartite system highlights the symbolic layout of the quadrants. With polarised options in North and South quadrants, East and/or West quadrants offer a physical and symbolic ‘half way’ in-between and off to one side of North and South quadrants. East or West are not ‘stuck in the middle,’ as they lie on a different spectrum to the North-South binary. This is illustrated in the following graph, where North, South and East quadrants are offered (Figure 6-224). The dotted purple line represents the voting axis for North and South. The red arrow represents the voting barometer as proportional popularity. The direction it points reflects the most popular quadrant. The red arrow pointing East reflects this quadrant’s ‘balance of power.’

Figure 6-224: A way to symbolically embody ternary voting within the layout of Room Womb, Josh Wodak

Having outlined the expansive terrain Tools and Rules were formulated in, the following contextualises the Tools and Rules implemented in v2. Staged video documentation of all the following are on Appendix A.

6.4.1 Criteria

Interaction modalities are often unrelated to form and content in Responsive Environments, such as using a touchscreen or mouse to influence ‘evolving’ Alife forms. In contrast, Interaction Design was intertwined with co-creating the concepts as interactivity evoked the subjects and processes by which Emergence functioned. Bolotin expressed the extent to which this occurs:

The focus of the work: that we can actively modify and engage with our genetic makeup through technology, also translates really well into how the audience can interact with the actual artwork...that is: the degree to which they embrace or
renounce this Being that they create could be reflected in the degree to which
they embrace or renounce the interface.\textsuperscript{731}

He desired my Interaction Design highlight the “subject matter and themes of
the work” being “cyber engineering, mutation, human rights [and] emergent
behaviour” through “a cyber-organic political paradigm of the future” which
“reflects/parodies the political press and voting system that may happen in say
50 years time.” To do so, he requested a balance between technological
sophistication and intuitive interactivity, since Designs “should seek to include
as many audience members as possible, not be intimidating, obscure or
discouraging of voting.” Designs had to “preserve an element of physicality
and movement, for example the physical pushing, pulling of audience
members from one area to another.”\textsuperscript{732} All Designs anticipated “150-300
people”\textsuperscript{733} and the proportion of attendees likely to actively participate within
the 15x15 metre square between screens in all venues. Ternary or quaternary
structures allowed for more engaging voting as more active quadrants reduced
spatio-temporal pressure by distributing voters over a greater area. While
distribution across quadrants was likely to be fairly even, as the options were
intentionally divisive and conducive to debate, the interface had to
accommodate up to 100\% of attendees voting for any option in any \textit{Session}
irrespective of whether more than two options were simultaneously presented.

In response, I devised additional criteria for Interaction Design to
determine how my technique of \textit{Arpeggiated Hierarchy} could balance
responsivity and responsibility so that participants exerted discernable
influences while not being burdened with excessive responsibility. The criteria
also formed a combinatorial matrix, as some were mutually exclusive
depending on which combination of the above Tools and Rules were used:

1) \textit{Facilitate intuitive interaction between: actors and attendees,
attendees to each other; all to technology and the artwork-as-
Environment.}

\textsuperscript{731} Mark Bolotin. E-mail message to author, June 28 2005.

\textsuperscript{732} Bolotin recognised this tenuous balance, since he included framing questions for my Designs, such as “how
does this work in relation to a technological model?” Bolotin. E-mail message to author, June 28 2005.

\textsuperscript{733} Bolotin. E-mail message to author, June 28 2005.
2) Encourage rather than enforce participation so attendees embrace different interaction modalities. To do so, offer multifarious layers of engagement in exploring the multifaceted ‘levels.’

3) Voting augments rather than interrupts narrativity, as theatrical interludes of attendee-artwork and attendee-attendee interaction. ‘Session’ format and duration flexibly allow for the suppression of individuality in the binary structure to be countered by individuals’ verbal and behavioral expression during ‘Sessions.’

4) Encompass the maximum range of physical agility or intellectual ability, in accordance with how democratic voting subsumes all differences to ‘one person: one vote.’

5) In light of 4), highlight how democratic voting suppresses individuality.

6) Encourage physical ‘voting with your feet’ and voicing opinions across the floor. Wireless or unencumbered interfaces still require moving to vote to avoid voting from afar: i.e. ‘you’ve got to be in it to win it.’

7) Balance meaningful spatial partition of the Parliamentary floor with not obstructing movement throughout the space.

8) Clearly inform when areas are active and inactive, such as climbing onto ‘Podium’ from the wrong side during ‘Sessions.’

9) Create an ‘aura of sanctity’ around ‘Podium’ to draw participants in when interacting. This brings participants into closer contact with one another and allows observers to stay ‘out of the action’ nearer the screens.

10) Coax voters to expediently and intuitively move into their chosen quadrant, vote and move out.

11) Clearly communicate participants’ individual, collective and cumulative influences through live graphics, video, sound, tactile and haptic feedback.

Additional criteria stemmed from presenting Emergence as a humorous and satirical “surreal social experiment.” This analogy is used by

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734 This relates to the discussion of narrativity-interactivity trade-offs and in particular to the discussion of caesura in narrative based interactive art on p113.

735 Bolotin. E-mail message to author, June 28 2005.
Chapter 6 – Emergence

Time’s Up, FoAM and Graham, who approach Responsive Environments as “serious games.” Game-like qualities assisted Parents’ role-playing, including:

1) *Playful goal orientated behaviour within the ‘Emergence’ tagline ‘Build Your Own Being.*

2) *Competitiveness between Parents-as-players when voting.*

3) *Combining luck, chance, fate, skill in a ternary network, like Snakes and Ladders: positive (Ladders), negative (Snakes) and neutral consequences of actions that cause unpredictable results, such as narrative bifurcations that lead ‘backwards’ instead of ‘forwards.’*

All criteria informed how Interaction Design combined the following modalities, listed according to their position along a continuum from inert-active through to dialogical interactivity. My techniques of *Intact Syntax* and *Arpeggiated Hierarchy* were used to weight modalities against one another to balance simplicity-complexity and determinacy-indeterminacy of participants’ interactions with the work. Balancing was between deterministic Quantitative Interactivity which impeded engagement through such simplicity and indeterministic Qualitative Interactivity which impeded engagement through too great a responsibility when interacting. The following sections discuss Modalities 2) to 6) according to their position:

1) *Inflexible and pre-determined: audiovisual sequences that ‘carried’ the narrative.*

2) *Structured improvisation of pre-determined: manipulating media modules according to Qualitative Interactivity, such as Ram’s responses during Heart Starting and Nurturing.*

3) *Live pre-determined: strictly scripted actions of actors, such as Ram’s responses during Punishment.*

4) *Live undetermined: loosely scripted actions of actors, such as Ram’s responses during Interrogation.*

5) *Live improvised: unscripted attendee-actor interaction, such as Finale.*

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737 This also referred to FoAM’s mandate for participants to ‘Grow Your Own Worlds’ in engaging with their artworks and to the Choose-Your-Own-Adventure book series.
6) Live improvised: unscripted participant-participant interaction, such as Sessions.

The following first discusses Qualitative then Quantitative Interactivity, as it follows the approximate order of these interactive modalities’ introduction over the staging.

6.4.2 Design of Qualitative Interactivity

Of the five scripted components involving qualitative interactivity, the first two, Heart Starting and Nurturing, occurred in every staging as they took place before any voting determined optional pathways. They were followed by Punishment and/or Interrogating if pathways with these options were selected. Each Finale was different, as it was the culmination of the pathways selected in that staging.

6.4.2.1 Modality 2): Heart Starting

The first interactive scene was starting Ram’s heart. He was presented motionless on Screen North, unconscious in his cot (Figures 6-225, 6-226). Head declared there had been a glitch in his biological birth and so asked attendees to clap together, with the BPM of their clapping creating Ram’s corresponding average heart BPM (Figure 6-227). Head informed them that the extent to which they clapped together also determined whether he would have a steady or erratic heartbeat in later life and that this had repercussions for Ram’s future health. The automated audio-analysis I designed was slated for v3, so v2 used AV Operators manually modifying audiovisual BPM of a CGI animation of Ram’s heart to synchronise with participants’ clapping.
6.4.2.2 Modality 2): Nurturing

*Nurturing* occurred immediately after *Heart Starting*. *Ram* awoke crying after his heart started. *Head* advised attendees they could comfort him by walking up and stroking his projected image (Figure 6-228). *Head* stressed this had ramifications for *Ram’s* later evolution, as attendees could ignore his crying to make him more resilient and self-reliant. It was left for attendees to negotiate their responses with one another, as individuals’ actions affected all other Parents. The automated RFID and sonar sensing I designed were slated for v3, so in v2 I visually analysed the volume of participants approaching *Ram’s* screen and their tickling and/or retreating from this screen. Video of *Ram* was accordingly manually manipulated in real-time between different states and intensities of crying and/or laughter.
6.4.2.3 Modality 3): Punishment

Figures 6-229, 6-230: Dialogical interaction with Ram and Head in Punishment and Interrogation in v3.
Photography by Jess Klingelfuss.

In *Punishment*, attendees could punish *Ram* one-on-one in response to him attempting to deceive his Parents. Volunteers stepped onto *Podium* and whistled into the microphone, with the strength and type of whistle inflicting corresponding amounts of pain on *Ram* (Figure 6-229). *Punishment* seamlessly combined pre-recorded scenes of *Ram* wincing with pain and the actor projected live, doing specific responses, such as cumulative shrieks in response to a quick succession of whistles.

6.4.2.4 Modality 4): Interrogation

In *Interrogation*, volunteers again climbed onto the Podium to ask *Ram* questions about any topic they liked (Figure 6-230). *Interrogation* and *Punishment* made dialogical interactivity highly performative, as unique contributions required standing on *Podium* surrounded by all fellow attendees. Conversing with live actors embraced emergent behaviour, as volunteers’ influences were unforeseeable to the creators. As these scenes embraced participants’ unpredictable behaviour, *Head* and *Hoster-Drones*

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As an example of audience Feedback Forms that remarked on this: “Loved the open question component – would have been brave enough to participate if there were more of these (and not specified amount e.g. “3 parents”) but really enjoyed it!” (FF86. Emphasis in original). Another felt “comfortable” performatively standing on *Podium* but “wanted to stay on top of stage but robot didn’t let me (how rude!)” (FF36).
shepherded participants to minimise caesura’s in the flow of the staging. Such literally conversational interactivity related to the Artist-Audience-Artwork interaction in forums after each staging, where the creators themselves were interrogated.

6.4.2.5 Modality 5): Finale

*Finale*, where attendees decided to kill *Ram* or release him into society, highlighted attendees’ responsibility to mould a Being that carried the consequences of their actions into successive stagings. *Ram*, as Random Access Memory, referred to whether each *Ram* was unique, or a composite of the ‘nurture’ characteristics instilled within the pre-defined confines of his ‘nature’. To evoke the concept of the Ghost in the Machine, *Ram* also stood for ‘ramifications.’ This occurred since each *Ram* was a socio-psychological ‘newborn’ undergoing his first rearing if he was ‘released’ during the previous staging, or a ‘newborn’ with an erased mind in a body with cumulative embodied experience if he was ‘reset’ during the previous staging. This was highlighted by *Ram* being a composite of instilled socio-cultural conditioning whereby the ‘residue’ of prior *Rams* exerted seemingly unpredictable responses when combined with successive socio-cultural conditioning from each staging. *Finale* challenged attendees’ to assess him against multifaceted criteria, such as whether they wanted Parents in the next staging to inherit their influences if they ‘reset’ him, or to allow the outside world to be subject to their Being by ‘releasing’ him. Such interactivity critiqued the ubiquitous *tabula rasa* in Interactive Art, where artworks do not respond, evolve, adapt or incorporate the meta-consequences of all interactions. Instead, participants in *Emergence* were responsible for the outcome of their own staging and also the influence of their staging on successive stagings.

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739 I proposed judgment be according to what *Ram* expressed his desired life vocation to be, so participants could interrogate his appropriateness to live out his own long term desires. This was used in v3.

740 Cumulative development of *Ram’s* character over successive stagings was inappropriate as v2 was only for three stagings, but Bolotin and I deemed it essential for the 22 stagings of v3.
6.4.3 Modality 6): Design of Quantitative Interactivity

It's not just a play but an experiment about us as human beings, working to create a desired being and in doing so, creating a desired society. By challenging the workings of modern society it makes us realise exactly who and what make up the Australian public. The audience’s responsibility is then to build this prototype and give it a human dimension – this is done through a voting system. The personality traits that the majority of the audience votes for is then implemented into the prototype. The audience gets really fired up at times and that's when the real fun begins. For example, some want the prototype to have more evil traits and some just want to it be a nice sincere guy. The voting results shape the prototype and the audience are able to view the positive and negative repercussions of the human they're creating. In doing so, Emergence places a social analysis on the kind of human beings we want to be living next door to.

Shivana Das

Das' review highlights how Sessions were theatrical interludes between media modules, when voters physically and aurally expressed their preferences for Ram's genetic modification. During Sessions, attendee-attendee and attendee-artwork interaction was encouraged according to:

1) The group dynamics of different attendees  
2) Decisions being made  
3) The Rules and Tools for voting  
4) Flexible pacing, structure and duration of Sessions  
5) Live unscripted audiovisual media and improvisational acting.

Head, Hoster-Drones and directional coloured lighting instructed when, where and how to vote, by standing in a corresponding quadrant next to Podium (Figures 6-173, 6-231, 6-232). The quadrants were part of a four metre diameter circular parquet (Figures 6-233, 6-234). Each quadrant faced the screen/option it related to, to attach voters spatially to their preference so like-minded groups formed a critical mass. Four rope barriers partitioned the

parquet into four sections at waist height. The rope barriers were suspended between the four Podium corners and the parquet edge. The ropes partitioned the quadrants, so voters had to exit the voting area to walk around the circle perimeter, to increase the likelihood of engaging with the opposition who had to do likewise to ‘cross the parliamentary’ floor.\textsuperscript{742} When a quadrant was an option, a corresponding colour of overhead light shone directly onto it, illuminating the boundaries of the quadrant. One colour of light was used for each quadrant. The colour of each screen’s text, background and voting tally matched the light of its’ quadrant.

All AV Operators studied a live video feed of the entire Room Womb from a camera pointing directly down from the ceiling. All AV Operators monitored quantitative and qualitative dimensions of voters’ interaction and instructed Head to steer the dynamic of Sessions, such as prompting him to give a live verbal tally or to indicate an imminent closure of a Session. The AV Operators gave real-time measurements of the number in each quadrant by adjusting an animated scale as voters entered or left quadrants. Scales highlighted how each voter changed the margins, so the scales could persuade undecided voters to tip the binary balance. Sessions ended after approximately two minutes, depending on how actively voters were debating the options. All AV Operators conferred on which quadrant had the most voters when the Session closed, and once the winner was determined, all lights dimmed and that option was activated, which segued to the corresponding media module depicting that genetic alteration for Ram.

\textsuperscript{742} References to a parliamentary floor appeared to be understood by participants in their Feedback Forms. As an example, in Part 6 of the documentary video of v2 in Appendix A a large group chants “Cross the floor! Cross the floor!” to persuade opposing voters to change their preference.
Figures 6-231, 6-232: Voting by moving to stand in areas corresponding to the different options in v3. Photography by Jess Klingelfuss.

Figures 6-233, 6-234: The parquet floor area and quadrants divided by the ropes, with Podium in the middle in v2. Photography by Zoltan Deak.

Figures 6-235, 6-236: QnA sessions, with attendees seated around Podium in v2. Photography by Zoltan Deak.
6.5 Implementation and Presentation

Emergence is an explosive performance of curiosity, science and in-depth thought about what the ‘perfect’ human could possibly be if we ever really had the choice to decide.

Emma Nesbitt

Over 500 people attended the three stagings of v2, with two sold out and one 90% full. Print and web posters, flyers, articles, interviews and advertisements highlighted attendees’ roles and responsibilities (Figures 6-189, 6-190, 6-191, 6-192, 6-193). As an example, The Australia Council for the Arts’ (OzCo) The Program stated that “by making collective choices and chatting directly with the giant characters on the screens the audience can determine the makeup of their ‘creation.”

It then mentioned the responsibility evoked:

But look out! With this power comes responsibility. In this mind-blowing experiment, some paths could lead to disaster: a lawless monster or a mechanised drone. The ultimate power is also the ultimate ethical experiment: will audiences be willing to discard human ‘weaknesses’ at the expense of inherent humanity?

SOH publicity was instrumental in establishing attendees’ expectation:

Our popular series of new experimental projects returns with an even more interactive twist. Not only do you get to have coffee and conversation with the cast and crew after the show, but – strap yourselves in – this time you get to call the shots during it!... In traditional film, the director controls the narrative and the audience takes a back seat. But what happens if these roles are reversed? How would you react if you were suddenly in control of the narrative? What decisions would you make? How would you interact with the work and the other audience members? Emergence asks these questions, you answer them! We encourage you


to attend more than one show to experience how the different narratives unfold.\footnote{746}

SOH policy was that Scratch Nights were one staging only and could not be full theatrical seasons as they “are an opportunity for artists to showcase their ideas and works at their earliest stages of research and development and are works in progress.”\footnote{747} However SOH granted three stagings to accommodate the different forms of Emergence. This suited the iterative design methodology of Emergence as “public laboratory”\footnote{748} as SOH forewarned audiences that v2 was “designed to get audiences talking about the production and provide their feedback to the creators.”\footnote{749} Feedback sessions began immediately after all stagings with the majority of attendees present (Figures 6-235, 6-236).

6.6 Evaluation and Conclusion

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figures/6-237.png}
\caption{Figures 6-237, 6-238: Titles of The Sydney Morning Herald reviews\footnote{750}}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=0.4\textwidth]{figures/6-239.png}
\caption{Figure 6-239: Title of The Daily Telegraph review\footnote{751}}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=0.4\textwidth]{figures/6-240.png}
\caption{Figure 6-240: Title of The Sun Herald review\footnote{752}}
\end{figure}


\footnote{747} Van 2005a.

\footnote{748} Rokeby 1998.

\footnote{749} Van 2005a.


It is hard to do justice to just how successful Synarcade have been in merging the trappings of technology with the concerns of a theatrical experience. The ethical quandaries that are thrown up in the course of the evening are real and their effects on the audience are palpable, resulting in some quite heated debates occurring within the space. The result is an experience that is both cerebral and visceral, with a genuine emotional attachment possible between parent and offspring. As a work of participatory theatre it is well-conceived, and as a social experiment it is an intelligent approach to concerns that will no doubt attain even greater significance in the years to come. Despite the choices presented feeling somewhat reductionist at times, the net result is a powerful and sometimes chilling work of interactive art.

Brendam MaCallum

v3 drew on evaluations of v2 according to co-creators, SOH Studio staff, reviews (Figures 6-237, 6-238, 6-239, 6-240), observation and participation in the feedback sessions and patterns of responses from over 400 Feedback Forms (FF). Soon Van’s review discussed the core features, being “an experiment in social interaction, governance and human development.” He found it “a fascinating exploration into what a group believes makes for a human being” due to how every show of Emergence is as individual as the mix of people standing around the theatre as they move the narrative to what they believe to be in the best interests of their creation and the story at large.

Alana Maclean’s review expanded on the role of the group dynamic in engaging with the work:

The audience themselves are clearly performers and the nature of any given performance is going to depend on their choices. If, like I did, you go in with a pretty tame and genial one, nothing too drastic will happen. You’ll receive a gentle reminder of the power of ethics and the final being will chat quietly with his “parents.” But I wonder what might happen with a fiercer audience, one where people know each other and are braver about jumping into debate. I’d like to see

van 2005b.
this show done in front of a bunch of 13 year olds... the intensity of your theatrical experience may very well depend on who comes in with you.\textsuperscript{756}

Ethan Switch’s review similarly highlighted how attendees were the subjects, as he found it “a fun and fascinating exploration into the minds of people” through “a subtle commentary on a microcosm of social and political inclinations.”\textsuperscript{757} Van found the conflation between pre-determined and live modalities was a “wonderfully deceptive achievement” that was “seamless in the overlap” to the extent that “the VJammers keep the audience guessing at which is which and [audiences] are never really certain either way.”\textsuperscript{758} Switch also praised this technique, as he found

\begin{quote}
Synarcade’s VJammers create a seamless blend of pre-recorded and live action segments that the difference between is nigh indistinguishable. Many moments throw themselves up on the screens with deception of reality a constant.\textsuperscript{759}
\end{quote}

Switch and Van agreed participants’ responsibilities were successfully communicated, with Van finding “the \textit{Head} outlines the rules of the game with simple and straightforward instructions.”\textsuperscript{760} While Switch also found “from the very start \textit{Emergence} breaks in the hint that the movement and participation of the audience is vital to the enjoyment and running of the production”\textsuperscript{761} and that “directions are simple and straightforward,” he located this in the deterministic binary structure, since “of all the possible streams for permutation, the limit is down on two choices for every decision.” For Switch, this rigid structure was offset by participant-participant debates provoked when “people start confronting each other and questioning their motives and reasons” whereby the “majority wins and all those without a bone of conviction lose as they watch the numbers sway back and forth.”\textsuperscript{762}

\begin{footnotes}
\item[758] Van 2005a.
\item[759] Feedback Forms expressed a similar response, with FF89 remarking that what they found was most interesting in the work was “the fact that I was so unsure of whether it was in real time.”
\item[760] Switch 2005.
\item[761] Van 2005b.
\item[762] Switch 2005.
\end{footnotes}
Van and the majority of FFs found the deterministic structure undermined the subject of indeterminacy. Although Van lamented the binary structure as “a limitation on the calculation of story probability and possibly as a way to limit the need to have the story makers [i.e. attendees] overthink as they’re being entertained,” FFs overwhelmingly suggested non-binary structures would not have placed too great an onus on participants as “story makers.” FFs asked:

What did you find interesting in the show?
What meaning did you interpret from the show?
How did you feel about the use of interactive multimedia and audience participation?
What developments would you like to see in the show?
Do you have any other Comments?
Have you seen these performers before?
How did you hear about this show?

FF8 found the binary structure concerned “how we react to black or white questions when we want grey” in terms of “how we choose our government and the way we react to laws and restrictions on our choice and decision making options.” Remedying this called for “more choices” with “smaller decisions at times” including “the four option idea occasionally” since this would “help build the story.” FF6 found they “would like to see more choices if technically feasible with possibly more subtleties” as for FF6 this created a conundrum:

It was a little bit frustrating as there wasn’t really time to talk the decisions through and some of the decisions didn’t have any good options – I could understand about the time factor and having to have a decision so that show could progress etc. but as an audience we couldn’t really adjust the question if it was inadequate, for example never tell a lie or never feel pain – both would really disable his life experience.

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763 FF8.
764 FF34.
Despite embodying “chaos theory in action” and “diplomacy in action”\(^\text{767}\) FF20 and FF21 also required “complexity to reflect more than 2 sides of the coin”\(^\text{768}\) with “more complexity if possible” as “we were often stuck with only bad choices.”\(^\text{769}\) The interrelated lack of “complexity” and “only bad choices” stemmed from offering the illusion of choice amongst trajectories that were both similar and overly-deterministic. FF63 linked this with inadequate voting processes, remarking “how difficult and unsatisfactory choosing is (or choosing out of those choices at least).”\(^\text{770}\) This detrimentally affected their experience:

> I get the sense I would never be happy with my choice – was that the point? There was a negative overtone that I wasn't sure was just a product of audience choosing, but felt like a ‘comment on society.'\(^\text{771}\)

The “negative overtone” stemmed from limited variation between different Rams. Some believed this was their responsibility, since ‘successful’ or ‘unsuccessful’ interactivity produced similarly disturbed Rams: “it made me realise how so many people do not communicate. If we had spoken and not thought separately we may have had a nice Ram, not an evil one.”\(^\text{772}\) Those who attended multiple times resented how Ram evolved into a malevolent creature, no matter what options were selected.\(^\text{773}\)

The multifarious and voluntary interactivity attempted to offset this structure of limitations by creating conditions conducive to engagement “in a way as to encourage audience participation rather than make the audience feel silly about taking part”\(^\text{774}\) where “the audience participation was pitched at the

\(^{767}\) FF20.  
\(^{768}\) FF20.  
\(^{769}\) FF21.  
\(^{770}\) FF63.  
\(^{771}\) FF63.  
\(^{772}\) FF82.  
\(^{774}\) FF66.
right level with people not bullied to take part.” In contrast, FF59 found attendees’ responsibility excessive, calling for “perhaps more explanation to the audience as to what they should be expecting; they need to be made aware of how they are expected to react.” FF2 and FF5 also recommended more obvious communication of their responsibilities in the exposition to let “them know from the beginning how involved they will be and therefore they will be prepared for this” via “more info[r]mation at the beginning about the requirements of the audience.” Both cited ambiguous responsivity-responsibility relationships, as “we didn’t know that our participation actually changed anything so were less inclined to move [to vote].” They were adamant “this would have been changed had we been assured that our collective decisions altered the outcome.” Similarly, FF33 required “better understanding of the implications of the decisions made” to understand “cause and effect regarding large group decision making.” This would placate requests for “more clarity in the choices” as FF13 “wasn’t absolutely clear about” whether “the actions of Ram [were] the direct response to the majority vote.”

Despite recommendations for tighter responsivity-responsibility relationships, causality needed to retain some indeterminacy to provoke interest in responses with varying predictability. FF84 found the meaning in “how an unexpected consequence would always result from a decision made” regarding “the way the audience was allowed to participate and make decisions about how the story would develop.” They found this interplay stimulating in

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775 FF36.
776 FF59.
777 As an example of this response, FF56 recommended “a little more substance in the booklet, a few questions to start conversations beforehand – more to encourage discussion. Some useful links (www) to further material – perhaps on the website.”
778 FF2.
779 FF5.
780 FF2.
781 FF5.
782 FF33.
783 FF13.
784 FF84.
“that all decisions have consequences and that it is impossible to create a ‘being’ and have it turn out exactly the way you intended.”\textsuperscript{785} This bind was partly evoked by the “dilemma of being a socio-engineer and a parent”\textsuperscript{786} which FF56 found was a “great idea because we not only participate but also have to face the consequences of the group decisions taken to develop \textit{Ram}.” Dissonance between these roles was explored via “the interactive nature” being tied to “the ethical questions raised.”\textsuperscript{787} As such, FF31 found the meaning in how “we are responsible for our interactions with others and how it effects them and that we need to consider what it means to be human especially in relation to human genome projects.”\textsuperscript{788}

Responsibility in unpredictable participant-participant interaction was “challenging [to] peoples responsibility”\textsuperscript{789} since “choices you make can influence everyone but ultimately it is the individual who takes responsibility.”\textsuperscript{790} Sessions displayed emergent forms of spontaneous responsibility when Parents defended and/or criticised strangers\textsuperscript{791} in what FF89 “thought...was a big social experiment to start feuds.”\textsuperscript{792} For example, in the documentary video in Appendix A a man calls to an undecided group “Don’t sit on the fence! C’mon we need you here. Don’t sit on the fence!” Soon after a lady says to everyone: “C’mon we’ve got to be responsible parents now.” In the same option from another staging, a man calls to the opposition: “Would you guys like to give complete control over the experiment? Come

\textsuperscript{785} FF84.
\textsuperscript{786} FF56.
\textsuperscript{787} FF56.
\textsuperscript{788} FF31.
\textsuperscript{789} FF52.
\textsuperscript{790} FF52.
\textsuperscript{791} Other responses on this topic include: “Let audience know choice option is for rest of show not just one option enhancement.” (FF58), “That every decision has many unforeseen consequences – and therefore too much control is not always a good thing.” (FF24), “One of the areas that I felt that show could consider is actually creating consequences for the audience for their choices.” (FF11), “The realisation that choices I make can really affect others – whether realising it or not” such that “what one person decides can affect another and we never understand the full impact until it is too late.” (FF82), and “Everyone is accountable for their actions and decisions even in regards to strangers.” (FF61).
\textsuperscript{792} FF89.
quickly!” while motioning for them to cross the floor. During \textit{Punishment} some participants reasoned with volunteers who punished \textit{Ram}. After four men had punished \textit{Ram}, a lady rhetorically asked “Why is it that it’s only guys who whistle?” Shortly afterwards another lady rhetorically asked a male ‘punisher’ “Are you happy?” after \textit{Ram} repeatedly pleaded for him to stop hurting him. In this instance, \textit{Punishment} ceased when participants protested enough to persuade everyone to stop.

Such Qualitative Interactivity complimented the Quantitative Interactivity, with FF68 finding they “really felt involved in the experiment” and “got very attached to \textit{Ram}” despite being caught up in the “passionate” and “very interesting...arguments between audience members.” FF26 found such interaction was not alienating since “its what I loved the most. I really enjoyed how it drew people out and also brought the audience together as a group, rather that the usual segregation.” While FF80 found it “a coherent concept of assumed consequences of socialisation” for FF58 it highlighted solipsistic sociality where “society doesn’t even know what it wants or how choices affect others. We are sheep.” Sheep references appeared often in FFs since \textit{Ram} desired a sheep-shepherd relationship to his Parents, such as when he tested if attendees would bleat like sheep after he pleaded with them to do so (\textit{Ram} also referred to Dolly the cloned sheep). FF95 found it “confronting that some people did it” and suggested “more confrontation of the audience” to raise awareness of attendees’ agency. While finding the work “an excellent idea” FF96 remarked on sheep as a metaphor for coerced conformity as they “felt like a sheep being herded.”

Alongside this role, being Parents also presented participants with the dual persona of observing a process they simultaneously participated in:

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793 See Part 7 on Section 5 of the DVD on Appendix A.

794 \textit{Hoster-Drones} also assisted in ending \textit{Punishment} once it became apparent that many attendees wanted \textit{Ram}’s punishment to cease.

795 FF68.

796 FF26. “The usual segregation” may refer to Interactive Art in general and/or in society-at-large.

797 FF80.

798 FF58. Emphasis in original.

799 FF95.

800 FF96.
I was torn between wanting to witness the evolution of the character and my need to be fully engaged in the choices that we were presented with.\textsuperscript{801} FF40 found that “rather than creating Ram, I felt we were re-creating ourselves, making changes or affirmations about our own ideas and values”\textsuperscript{802} while FF51 did not “know whether to take more away from Ram’s experiences or from the choices the audiences made themselves and what that says about society” and asked the creators “Do we learn from the piece or from the audience?”\textsuperscript{803} This conflation intrigued attendees about what Emergence reflected about them: \textsuperscript{804}

At first we thought we were doing an experiment on Ram but then we realised... you were finding out what kind of people we were - so the experiment was on us.\textsuperscript{805}

Being the subject stimulated desire for accurate and substantial information about attendees’ individual and comparative values and perspectives.\textsuperscript{806}

The ways that v3 Design meaningfully analysed relationships between participants’ DaP profile and their votes accorded with many FFs, such as FF53, who was interested in the choices people made: “were people more likely to choose creativity upfront [in ‘Creativity versus Logic,’ the first option] – because people who come to a show like this are interested in fostering creativity? I want to examine the results and see if there is a pattern in the way people make choices” such as whether people “follow the crowd.”\textsuperscript{807} They also suggested “recording of results and [an] examination of the choices people made” and more variation in the Rules, such as “a situation where people are

\begin{itemize}
\item \textsuperscript{801} FF50.
\item \textsuperscript{802} FF40.
\item \textsuperscript{803} FF51.
\item \textsuperscript{804} Other responses on this topic include: “How the audience reacted to the options. It saws a lot about our opinions as a society and a certain demographic.” (FF8), “I liked the production with the audience as the players.” (FF46), “An experiment on us – not just the being.” (FF61), “The audience was a big part of the performance... therefore the opportunity and encouragement offered to the audience.” (FF14), “Force the audience to make tough (tougher) decisions” and “audience penalised for their choices.” (FF41), “More of an insight into the audience than Ram.” (FF9), “It was a study of the audience.” (FF81), and “[I] felt it was equally an experiment on us! Why was logic/creativity thought black and white?” (FF68).
\item \textsuperscript{805} FF22.
\item \textsuperscript{806} This was specifically addressed in Design\#15 as discussed on p333.
\item \textsuperscript{807} FF53.
\end{itemize}
forced to reach a consensus” even if it “could take a long time.”

FF62 suggested “research into whether different colours [of the Interface lighting] can influence peoples decisions” to examine “the difference between choices made by specific age groups, religious and work backgrounds.”

Similarly, FF83 advised to “learn from the audience” by “ask[ing] the audience questions on what made them decide was Ram’s best direction.”

Finding the meaning to be “the importance of the choices we make in life and what outcomes are created,” FF35 found Emergence “really made you think about why we choose certain things, what influences those choices” so they suggested we “really get the audience to discuss and explore their choices, to find out why we have made these choices.”

Similarly, FF24 suggested “more audience debate” amidst “more difficult moral questions with higher stakes” to dissolve the binary structure through using “less bias in some word choices” such as “logical or creative” in favour of qualitatively assessing “enthusiasm as well as majority in the decisions.”

FF14 argued for “people saying the reason for their decisions to convince others” while FF40 suggested “more encouragement to audience members…to be daring – yell out etc, and [to] encourage others to move” since they found “there could have been more verbal interaction and freedom.”

FF65’s strategy in the “encouragement of argument” involved expanding the Rules to include factions electing their “colour or choice spokesperson” while FF9 requested “different

808 FF53.
809 FF62.
809 FF83. This absence was remarked upon when a woman asked Bolotin during a Q-and-A session “have you actually gone across to the audience and asked them why they made their decisions?” and FF66 which commented that “For the Q and As I would have liked Mark (Bolotin) to have elaborated on the theory behind the work, the inspiration and his own personal views in context with current questions surrounding genetic engineering and democracy/polyarchy.”
811 FF35.
812 FF24.
813 FF68.
814 FF14.
815 FF40.
816 FF65.
types of crowd interaction (other than movement/clapping)” in tandem with “forcing the audience to justify decisions.”

v2 exceeded SOH expectations, as a loose group of non-professional artists successfully staged a complex, vulnerable and unrehearsed work that made unprecedented use of the SOH Studio and interactivity at SOH. The responses from co-creators, SOH Studio staff, FFs, reviews, and observation and participation in the feedback sessions affirmed that v2 evoked multi-faceted indirect, direct, literal, metaphorical, instantaneous and cumulative environmental responsibility amongst participants. Diverse individualised, nuanced and intimate Qualitative interactivity alongside Quantitative voting interactivity created an environment in which participants voluntarily engaged through multi-faceted levels of responsibility, while still being immersed in the multifarious narrativity. Based on the v2 staging SOH became Co-Producer and assisted our successful OzCo grant application for v3. While v3 was required to implement my more sophisticated and responsive Interaction Design, v2 was successful in its use of “certain tactics” with the “stated aim of interaction between strangers.” Both v2 and v3 manifested such emergent and swarm behaviour through the en masse interactions between attendees, many of whom engaged passionately with one another through the work’s “synthetic sociality” and “imagined communities.” How I developed my exploration of such evocations is discussed in re-conceiving the work for v3 in Appendix E.

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817 FF9.
819 Penny 1996b.
820 Anderson 1983.