

Babelswarm

A real-time 3D art and audio project by
Adam Nash, Christopher Dodds and Justin Clemens
April 2008

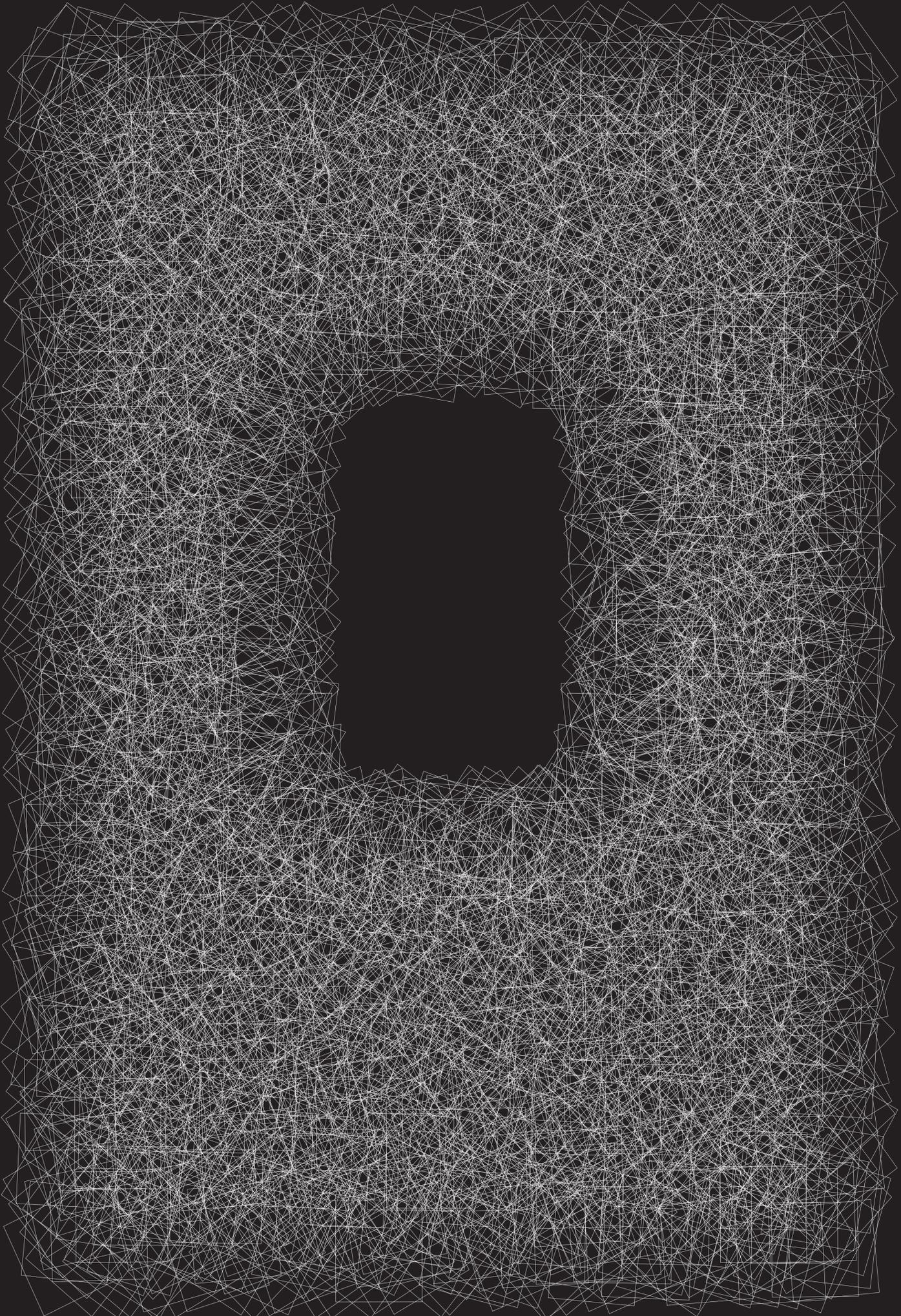
Essay by Justin Clemens

This project has been assisted
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‘Socrates: What a lucky morning this is turning out to be! I was looking for one virtue and have found a whole swarm of them’ – Plato, Meno

Welcome to Babelswarm. Babelswarm is a collaborative art project in *Second Life*. It is the work of writer Justin Clemens, artist/designer Christopher Dodds, and musician/3-D real-time artist Adam Nash. It has been funded by an Australia Council arts grant, and staged in April 2008 with the assistance of the Lismore Regional Gallery in New South Wales, Australia.

MUVES & MMOs

Second Life is an online, interactive, real-time virtual world, commonly known as a MUVÉ (a ‘multi-user virtual environment’) in the acronym- and neologism-heavy jargon of contemporary technological life. It developed out of the possibilities created by an ever-increasing number of ‘massively multiplayer online role-playing games’ (MMORPGs or, more briefly, MMOs) that have been spawned in the global digital frenzy of the past decade. *Second Life* is a commercial enterprise, run by Linden Research Inc., aka Linden Lab, based in California USA. Entry to *Second Life* is free; anybody with the requisite technology is able to sign up, enter and to some extent move around its ever-morphing ‘metaverse.’ If entry is free, however, movement and growth are economically and socially restricted. You can’t go everywhere; permissions and payment are often necessary, just as in your First Life. Simulated money in ‘Linden Dollars’ is involved in buying and building property in *Second Life*, or if you want to do business with others, these virtual tokens can be exchanged for ‘real’ money in the ‘real world’ via virtual currency exchanges¹.

Grants & demands

In 2007, the Australia Council, the arts funding body of the Australian Government, offered \$20,000, the largest grant to date anywhere in the world for a project on *Second Life*. As the OzCo publicity had it: ‘The Australia Council residency will enable a team of up to three artists, including a writer, musician/sound artist and digital visual media practitioner to collaborate on the development of inter-disciplinary artwork in *Second Life*. The project, which will take place online, will require the artists to explore the possibilities of literary, music/sound art and real time 3D arts practices within the virtual realm. The successful team will ultimately develop new, experimental artistic practices and observations on the social and cultural layers that have evolved in *Second Life*.’ Note the emphasis on collaboration, on multi-media, on immediacy, on diversity, on anthropological novelty, on experiment: exemplary values of avant-garde modernism, now the declared values of our corporate multinational ‘second modernity.’

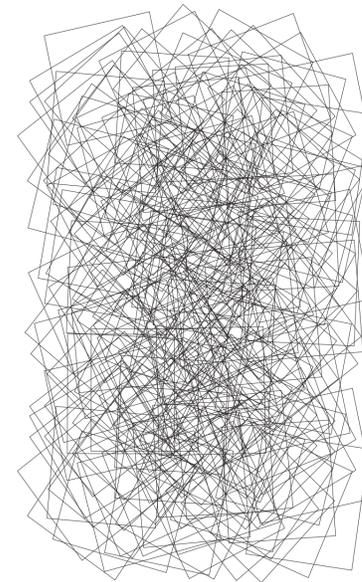
Entertainment as a force for innovation

Every epoch has its characteristic form of entertainment. New epochs demand new entertainments, and these are always more than just diversions or good clean fun. In the Elizabethan and Jacobean era — William Shakespeare’s time — it is the theatre. For the first time in England, one finds permanent, purpose-built playhouses, dedicated to a single end. Most are located on the outskirts of London, beyond the control of the city fathers, mingling with gambling joints, taverns, bear-baiting pits, brothels and leper colonies. You couldn’t just say, ‘I don’t know how I ended up here, I was just going to St Paul’s and found myself by accident drinking in the Mermaid Tavern.’ You really have to know what you’re doing — or at least have some sense of the transgression — when you head towards the locales for the new entertainments. New companies are formed to write, produce and act the plays to be staged; new forms of investment in entertainment, for instance as joint-stock companies, are developed; new routines of patronage are forged; new audiences are produced. The plays are no longer the traditional, doctrinal, community-orientated homiletic ‘mystery plays’ of medieval times; they become professionalised, dramatic, novel, secular, violent, and spectacular. Economically-driven, they’re fast-turnover, transient productions that no-one in their right minds at the time would ever have thought could be worthy of preservation, let alone praise. ‘Shakespeare, an historically important personage? You gotta be kidding!’

What theatre did

The new theatrical sites are attended by the high- and the low-born, the rich and poor, locals and foreigners, men and women. The new plays pick up on and put to work all existing forms of discourse — religious doctrines, classical stories, poetry and rhetoric of all kinds — in a dynamic meta-generic form which explicitly represents so many of

the problems and anxieties of the time. But EJ (Elizabethan-Jacobean) theatre is not just innovative as a form; it also accompanies and drives new kinds of economic innovation and competition. The theatre is so radical that such major critics as Harold Bloom even see it as having invented the very ‘idea of the human,’ of presenting radically individual characters that interact and change over time in their own ways. The theatre becomes a key site for ideological struggles, and for struggles for economic and political control.



The theatre simultaneously becomes one delimited site in the socio-political universe, and the site that essays to model that universe itself, that bit part of the whole in which the whole of the whole can be staged. As Jaques says in Shakespeare’s *As You Like It*, ‘All the world’s a stage./And all the men and women merely players’(2.7.139-140); or, as Enobarbus says of Cleopatra, the emblem of the great events-manager of the classical world, ‘Age cannot wither her, nor custom stale/Her infinite variety’ (*Antony and Cleopatra*, 2.2.245-246). Yet theatre is also somewhat déclassé, aesthetically, morally and politically suspicious, the target of censoriousness and censorship, of anti-theatrical discourses that abominate the real social and political transformations that theatre exemplifies and represents.

New spaces for new activities, actions & acts

This sketch of EJ theatre allows us to introduce a number of themes pertinent to an understanding our own contemporaneity. New forms of entertainment are always more than just diversions. They don’t merely provide a means for whiling away the hours, but generate new models for real action in the real world. Indeed, they change the reality of the world itself, transforming the relationships between possibility and actuality, between the virtual and the real, between means and ends. They propose and underwrite new forms of appearance and action for humans to identify with; they offer new identities and new programs for identification. If such entertainments draw from a vast range of already-existing forms, they transubstantiate this generic multiplicity into something unprecedented. Entertainment doesn’t merely represent, but helps to drive socio-political developments. It is integrally linked with the development of radically new spaces, with new architectural visions and with new communication technologies. It helps to seduce people into using new technologies that they would otherwise not touch. It puts itself under the protection of new forms of powerful patronage, at the very moment that, in being so radically new, it simultaneously forges links with socially-marginal phenomena of criminality, sexuality, vio-

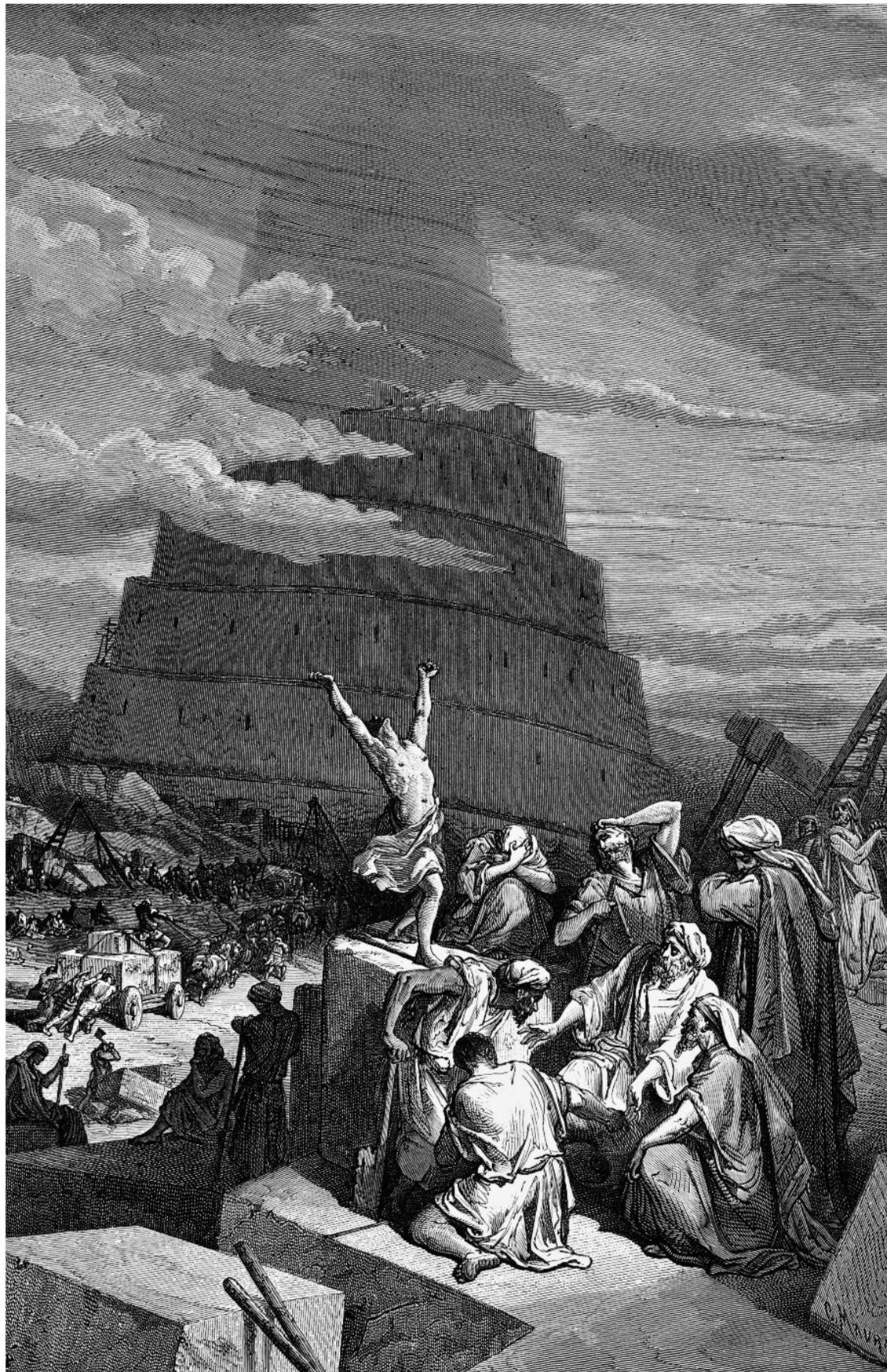
lence, maladjustment and anomie. Indeed, it often directly and consciously addresses itself to socially marginal roles and characters, precisely because their gap of marginality offers a kind of social opportunity for taking risks those in more powerful or established positions would never take. In the 16th century, the theatre played this role; today, an analogous role is played by videogames.

Video-games killed the radio-star

Everybody remembers the first great video-games, such as *Pong* (a kind of abstracted tennis-game) and *Space-Invaders*. Then wave after wave of these games were released, such as *Galaga* and *Pac-Man* and *Asteroids* and *Defender* and *Donkey Kong* and *Mario Brothers* and *Street-Fighter*, and so on and on, which found their home in neighborhood-stores, pubs and specialized game venues. But there were soon also games for the home-market, including the Atari console; then the miniaturized, portable electronic games for which Nintendo stands as a symbol. Often violent, escalating in difficulty as one progressed through the levels, based on a restricted number of game ‘lives,’ the games were experiments in generating new electronic, interactive intensities. The growth in the home computing market since the 1980s saw the development of *Castle Wolfenstein 3-D*, *Doom* and *Quake*, first player shooters, in which the player negotiates simulated 3-D spaces online, all the while blasting aliens, Nazis, and what-have-you in an orgy of militaristic destructiveness. Games went through another quantum-leap when they got themselves connected, bootstrapping themselves with the means of another coterminous development, those early text-based MUDs (multiuser dungeons), in which enthusiasts explored consensual hallucinations online. As the media theorist Michael Dieter has put it, it’s the interconnectivity of such successful enterprises as *World of Warcraft* or *EverQuest*, among other MMOs, that have utterly transformed the world of gaming.² No longer solitary, no longer just *you, here*, on *this* terminal — you are suddenly something else, somewhere else, in a seemingly-delocalised, entirely-constructed virtual space supported by an unimaginably complex electronic network in which you can move about and interact with others in real time. This self-reflexive, accelerated connectivity — in a complex, unstable system that is capable of very quick dynamic evolution — immediately starts to produce unforeseen mutations, with often-unforeseeable consequences. The profuse generating of generations of games undergoes an irreversible proliferation, modification and acceleration to which the players themselves directly contribute.

The war at the heart of being

Everybody knows that war is at the heart of existence; that, even under alleged conditions of peace, a war economy drives strategic and technological developments that ultimately trickle-down to the banality of every day life. As the ancient Greek philosopher Heraclitus the Obscure put it: ‘War is the father of all and king of all’; as the contemporary German media theorist Friedrich Kittler puts it: World War II was ‘the mother of all technologies.’ As Kittler therefore recommends, ‘media analysts would be well-advised to remember the military history of their own subjects,’ given that ‘what appears as narrative and, accordingly, entertainment in media possibly only screens semitechnical efficiencies.’³ It is therefore no accident that war itself becomes one of the dominant representational modes for gaming; participating in these games therefore involves a kind of imaginative recreation of the very conditions that make the games possible in the first place. Above all, the MMOs rely on hardware and concepts born in the research-units of secret agencies worldwide, such as the ‘world wide web’ or internet: the Net evolved from a US Defence Department communications network (ARPANET) linking military bases, university research centres, and defence contractors. It was designed to be open and accessible — to communicate and to be impervious to nuclear attack.⁴ Flexible, responsive, de-centralised, aggressive, a game is possibly always a war-game, and an exchange in a real war — whether you know it or not, whether you like it or not. The anticipatory virtuality of such warfare should be emphasized: if we were attacked by nukes, *then* what sort of system would enable us to respond? Contemporary home gaming consoles are now so sophisticated, they can even fly intercontinental ballistic missiles; games like *America’s Army* are directly used for recruitment purposes by their eponymous backers; real military hardware shares similar controls to your home unit, so real military training can be



The confusion of tongues. Engraving by Gustave Dore, 1870.

1. And the whole earth was of one language, and of one speech. **2.** And it came to pass, as they journeyed from the east, that they found a plain in the land of Shinar; and they dwelt there. **3.** And they said one to another, Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar. **4.** And they said, Go to, let us build us a city and a tower, whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth. **5.** And the LORD came down to see the city and the tower, which the children of men builded. **6.** And the LORD said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do. **7.** Go to, let us go down, and there confound their language, that they may not understand one another's speech. **8.** So the LORD scattered them abroad from thence upon the face of all the earth: and they left off to build the city. **9.** Therefore is the name of it called Babel; because the LORD did there confound the language of all the earth: and from thence did the LORD scatter them abroad upon the face of all the earth.



Top: An early experiment using particle emitters to create language. **Bottom:** A near complete Babelswarm tower is rendered using live chat data captured in *Second Life*.

virtually done in your living room. The C3I of Pentagon strategists — Communications Control Command Intelligence — have been now injected into and absorbed by daily life itself. Our MMOs are MAD's children.⁵ These children will undoubtedly become parents in their turn. But of what?

Just gaming

What is a game? Games are so diverse as to resist any simple definition. Some games are solitary, others require more than one player; some games have a clear winner and loser, others have more obscure outcomes; some games have goals, others have no goal, or multiple or unclarified goals; some games have a finite end, while others can be played indefinitely; some games are linear, others are non-linear; some games are frivolous, others are deadly serious; some games are enjoyable, others are not; and so on. The sociologist Roger Caillois once divided games into four different kinds: *mimicry*, *agon*, *alea* and *ilinx*. Mimicry: games of expression; Agon: games of competition; Alea: games of chance; Ilinx: games of giddiness. All of these can be found online, sometimes as part of the same game-package, in which one might present oneself as an entirely customised avatar, competing with others to reach a particular target first, with some random occurrences thrown in, and, finally, with the possibility of ecstatic states to come (e.g. teledildonics). These divisions, useful as they are, come a cropper when it comes to the MMOs, which explicitly make possible innumerable different kinds of game within their environments, from versions of solitaire and puzzle-solving to striving against others to gambling to deranging occurrences. In other words, MMOs are not only or simply games, but meta-games — games in which the question of what-a-game-is, of what is involved in playing a game — must itself be decided. The game itself forces you to decide about what sort of a game it is, how long and how it should be played, what you want to get out of it. The 'gaminess' (so to speak) of such games is no longer a given.⁶ Moreover, whatever your decision, it is never simply final, nor universal, nor determining. It is also dependent on a range of other factors, including hardware and network limitations, the interventions of controllers and programmers, not to mention other players in the system.⁷ These meta-games are now so complex that they run the risk of being confused with life itself.

Reality disappears in the universal game

The relationship of games to reality is itself a problem raised by every game. The diversity of games means that different games pose different questions about reality. If this game is pleasurable, from what does its pleasure derive? What sort of pleasure is it? How does it relate to unpleasurable things? Is it or should it always be a question of pleasure? Does the pleasure derive from the simple fact of expression, or of especially virtuosic expression, or is it a by-product of something else? Is the game an escape from reality, just another part of reality, or does it express something essential about reality itself? Does it evade, make or define reality? In a short fiction entitled 'The Lottery in Babylon,' the Argentinian writer Jorge Luis Borges imagines a culture in which a single game of chance infects reality to such an extent that the differences between gaming and existence are no longer in principle discernible; that what began as a simple lottery has engulfed and now determines the cosmos itself. What is a game that one cannot help but choose to play, one which has a universal reach and import, and is thus coextensive with existence itself?

Post-convergent media

Is *Second Life* a game, or is it something else? This question isn't a negligible one. Certainly, one can play games, recognisable games, within its immersive environment: war games, sex games, games of money and risk. Given the mimetic powers of its virtual engines, some of these games can even look like the games in the real world, to the point of indistinguishability. Like other SIM environments, *Second Life* drives towards an imagistic-doubling-of-the-real, at the same time that it is clearly not just a double, but a transformational supplement, altering possibilities in reality itself. And it does this in a powerful new way. Adam Nash has denominated *Second Life* (and other real-time 3D environments) as a 'post-convergent medium,' which 'means that no single media-element (sound, vision, sociality, network, time, etc.) takes precedent; rather, they all exist equally in a symbiotic relationship, without which none of them could exist.' Sean Cubitt has identified some of the consequences of this post-convergence for SIM environments: 'The narcissistic, synergetic hyperindividualised mayor of *SimCity* is the formative conjuncture of multimedia aesthetics, in the sense that, from a certain perspective, the histories of media convergence in the 20th century trace an arc towards an increasingly "organic", unified and coherent experience. As humans come to occupy an increasingly human environment — urban, cultured, managed — there comes a double demand, tourist and transvestite, for cultural forms that combine the shocking and the nurturing, the speed of modernity and the narcissistic pleasures of regression.'⁸ Or, as Mackenzie Wark notes of the *Sims*, it may both be 'allegory' and an 'allegorithm' of life.⁹

The dark lords of the SIM-machine

If human beings have always attempted to reproduce reality by means of simulation-machines — and why not think of some of the most ancient cave-paintings, with their hands

and horses in this frame? — one of the most famous and influential accounts turns reality itself into a (degraded) simulation-machine. In the *Republic*, the classical Greek philosopher Plato imagines prisoners chained to the wall of a cave. Behind them is a gallery across which puppets are moved, and a great fire casts the shadows of the puppets onto the wall; the prisoners therefore know only the subterranean play of shadows, which is for them reality itself. A prisoner who escapes from the cave will stumble up into the light of the real sun, where, dazzled by its unbearable power, he or she will be blinded and deranged until he or she finally adapts to the experience. But, as Plato says, if the escapee then returns into the depths, to alert the still-incarcerated prisoners to the real state of affairs — that they are, indeed, prisoners, deluded captives of darkness and shadows — would they not think the returned escapee mad? Might the prisoners not even try to kill the person who informs them of the one, the true, the good, who declares that they are indeed deluded, just as the philosopher Socrates, Plato's master, was executed by Athenian democracy for corrupting the youth and impiously denying the gods of the city? The ignorant cling to their ignorance, considering the truth-bringer so mad and dangerous that the latter must be extirpated, even obliterated.

Just caving

The history of media has been haunted by Plato's fable, the greatest of all philosophical parables of the relation of the virtual to the real. The Cave is the greatest paradigm of a near-total simulation-machine, from which escape is unlikely; its simulations are so powerful that they are almost universally accepted as reality itself. If it is near-universally agreed that media establish what even counts as reality for their subjects, for Plato it is untrue and immoral to remain in their frame, when the truth is really out there, beyond the limits of image and experience, independent of all human mediation. On the other hand, perhaps 'there is nothing outside the text' as the philosopher Jacques Derrida once put it, that, in other words, the limits of media are the limits of worlds themselves. In this new regime of immersive digital environments, at once interactive, dynamic, plural and delocalised, we are placed in situations that are not simply caves — precisely to the extent that they are self-evidently contingent, multiple and transformatory. They are more like auto-illuminating cave-networks, labyrinthine, involuting, constantly reforming vortices of light without over-ground or sun.

New spaces & the event of multiple couplings

The complexities of space itself are exacerbated by these new environments. Whenever one enters an environment such as *Second Life*, one is simultaneously in: 'first life,' at a keyboard, probably in a room of some kind, in some kind of urban space (although this is not of course necessarily the case); in a particular 'space' in *Second Life* itself. There is ambient, contingent noise in the place where you 'really' are; there is noise from your equipment issuing into and from the *Second Life* space. This latter space is further framed by: i) the screen itself; ii) the frame of the *Second Life* interface; iii) the 'frame' that is the specific locale in *Second Life*; iv) the frame of the avatar-view (AV), which might either be default (the characteristic over-the-shoulder aspect, with the upper back of the avatar in frame) or mouse-look (as if you were looking through your own avatar's eyes), and in the third person, when one's relationship to an avatar is completely separated. Note that every word we have to use here is already a metaphor: 'space,' 'frame,' 'view,' 'eyes,' etc. Framing becomes a multiply-organised, shifting play of forces, at once: i) a function of the hardware, the micro-chips and the macro-net; ii) of the MMO software; iii) of the creative wetware (i.e. a coder's sculpting of the hardware-software limitations to produce a particular environment); iv) of the interactive wetware (i.e. the individual user's exploration and customisation of the environment, his or her interactions with contingent others). Moreover, some of these frames are capable of further multiplication, of what Gilles Deleuze calls a 'disjunctive synthesis,' for example, by having more than one frame opening onto utterly disjoint spaces in other times in the same frame of the screen. The *sampling of the event of the coupling of the disjoint* is one of the basic operations of today's post-convergent media. That is, media residues — text, images, movies, sound, noise, etc. — from wildly different times, places and designs are able to be brought together in a unique act of sampling. The bringing-together is not just an act or a product, but an event whose peculiar status makes it able in principle to be sampled in turn, giving it a certain 'samplability-power' that isn't exhausted in the instant of its act.

Time-image & interactive autism

The time-images projected by some of these MMOs can also be pretty bizarre. You, the user, are still of course in 'the real time' where you are, shifting in and out of the *Second Life* time and times. Because of the capacity to archive all electronic events, the archive itself becomes able to be perfectly replayed *ad infinitum* or *ad nauseum*, at the same time that, in this very replaying, identical presentations can be articulated with others from other times. Time itself becomes a composite of heterogeneous past times as pastime. As can the forms. You can constantly shift your forms, as can others; you can 'fly,' 'teleport,' 'walk,' 'talk,' etc. These are, as already stated, entirely metaphorical and entirely reaviewmirroristic, calibrated

to alleged 'real world' movements. You can get 'married' and 'buried' online. On the other hand, objects in this world can have 'physics' or not. We can have 'wind' and 'clouds,' which may seem to move with the wind but in fact move according to their own programming exigencies. The overarching *Second Life* environment is itself bizarre: it seems to be pre-Copernican in that the sun moves around the flat earth, at once geocentric and geostatic; there is a four-hour day, with both sun and moon; objects have a rate of fall, and all avatars wiggle their arms and legs in a peculiar way when they are 'falling'; avatars also make 'typing' gestures when 'talking.' In fact, avatars characteristically show themselves performing what they're doing: with the magic of prim-building, dotted rays shoot from the avatar's outstretched hand. Undoubtedly part of the incredible appeal evinced by such environments as *Second Life* is this ability to enact infantile fantasies of omnipotence: avatars can be completely customised; you can be male or female, young or old, of any background. One enters zones of what Rey Chow has called 'interactive autism,' in which the mechanisms of others-identifying-you-with-your-dissimulating-representatives are factored in at the most basic level. Moreover, one of the often-aduced reasons for the surprising popularity of *Second Life* in particular vis-à-vis other MMOs is that Linden Labs explicitly give individuals intellectual property rights to their *Second Life* creations — thereby permitting those creations to be traded just like any other commodity.

To be is to be surveilled

Yet for a medium allegedly founded on a principle of hyperconnectivity and interactivity, it can be surprisingly difficult — technically finicky and time consuming — to really share stuff online. As Adam Nash has put it, 'For a MUVIE, it's really very fucking inconvenient to share things on *Second Life*.' Permission has to be explicitly granted for every detail. It is this technical necessity for total control that also pushes the problem of new media surveillance to the fore. Nothing you can do online can be exempt from potential surveillance, by means of a kind of universal expansion and intensification of Panoptical techniques. *Second Life* is exemplary in this regard. Linden Labs themselves declare:

6.2 Linden Lab may observe and record your interaction within the Service, and may share aggregated and other general information (not including your personal information) with third parties.

You acknowledge and agree that Linden Lab, in its sole discretion, may track, record, observe or follow any and all of your interactions within the Service. Linden Lab may share general, demographic, or aggregated information with third parties about our user base and Service usage, but that information will not include or be linked to any personal information without your consent.¹⁰

As Christopher Dodds writes: 'Surveillance technologies are easy to come by, and *Second Life* could be considered a test-bed for the emergence of ultra-surveillance-enabled citizens. It offers unprecedented access to tools and expertise, with residents able to construct or buy sophisticated monitoring and tracking devices whose capabilities far outstrip their real-world counterparts.'¹¹ If such thoroughgoing surveillance is in some ways to be deplored and managed, it also shifts the grounds and experience of being surveilled at all (excuse the horrible neologism). In an attention-deficit-disorder world, in which attention itself has become one of the most prestigious and sought-after commodities, having other people follow your movements in every possible world can be a real pleasure. To parody Oscar Wilde: today, the only thing worse than being surveilled is not being surveilled. The deleterious situation of bimbo pop-stars — ceaselessly hounded by ravenous paparazzi, their sexual exploits and lack of underwear strewn across the media like petals in a field, their mental health and that of their families threatened, etc. — almost provides some kind of demented utopia for our netizenic multiverse. Even if it's unbelievably humiliating, isn't it better that lots of people see it than if they don't? The most extreme punishments in such a multiverse therefore come down to being-excluded from even the possibility of-being surveilled: not non-existence, but having to exist without any attention at all. It is undoubtedly this threat of existing without attention that has helped to render new online formats such as *Facebook*, *YouTube* (and *YouPorn*), *Twitter*, and so on, so extraordinarily successful, not to mention the enthusiasm for TV reality shows such as *Big Brother*.

Big Brother is ignoring you

Despite the appeal of denouncing the degradation of audiences by new media — denunciations that have an august history stemming from Plato's Cave, in which the essence of the audience is imagined as a mob of violent and incarcerated ignorants — these new media are directly at the mercy of their audiences. Endlessly receding, the 'black beast' of the audience (as the French philosopher J.-F. Lyotard once put it), now has the chance of seizing the means of social creativity. When recording devices themselves become inherently creative, audiences take back through interactivity the direction and content of their entertainments. As they do so, audiences transform themselves and their worlds, force themselves into appearance as something other than they are. *Big Brother's* not gonna ignore you now.

Marshall McLuhan famously declared that ‘the content of a medium is always another medium,’ consuming its predecessors’ content before developing new forms. This is where *Second Life* establishes itself: between consumption, mimicry and its own singularity.

Rearviewmirrorism & mirrorical returns

Marshall McLuhan famously declared that ‘the content of a medium is always another medium,’ consuming their predecessors’ content before developing new forms. This is where *Second Life* establishes itself: between consumption, mimicry and its own singularity. This accounts at once for the ‘rearviewmirrorism’ of new media, and their tendencies to go beyond, without that beyond ever being immediate or immediately given. In the case of *Second Life*, it encompasses: text, sound, visual images, archival powers, interactivity, etc. To the present, it has regularly been accused by critics of: i) being too restrained by technical exigencies; ii) being too captured by economic exigencies; iii) being too subject to power exigencies (e.g., constraint and surveillance); iv) being too ‘open’ to enable true art. These anxieties outline a kind of field of default positions that are often promulgated by established institutions and their personnel: *Second Life* cannot be more than reactive, exploitative and repetitive. It is reactive, because what can be done with it is limited by the technical environment itself, unable to burst the frame of the screen or the rehearsal of older forms of representational technology. It is exploitative, because the creative imaginations of individuals are being put to use for free by the corporation that runs and monitors the environment; the meagre amounts of creative and economic surplus that individuals can generate are feeding the bank accounts of a few reclusive CEOs. It is repetitive, because nothing truly new can ever happen within such a space, only the representation of archival materials, and the renomination of such as ‘novelty.’

From money, technique & law to the problem of art

The principle that underpins such critiques remains a suspicion of the principle of property rights as pure abstract representation ultimately sustained by military-corporate economics: this space is delimited and owned and regulated, etc, according to this or that technical, economic, or legal restriction. This has consequences at every level, from very abstract struggles over intellectual property, to the behaviour of your avatar *in situ*. You aren’t even able to go ‘naked’ in ‘public’ in *Second Life*. Economic motives, technical limits and legal control are brought into alignment and rigorously enforced, sometimes explicitly, sometimes implicitly. But shouldn’t the reverse be true? Or shouldn’t there be more to what can be done that escapes or exceeds or otherwise evades these representational devices? One could answer: yes, there are always technical and economic limitations. But these don’t determine or over-determine the potentialities of new uses. That is what needs further exploration: all the possibilities that are as yet virtual, as yet unactualised by the medium or post-medium of *Second Life*. So: plays with archival recording of happenings; splitting of spaces, some visible some not, some audible some not, some utterly unrepresentational some not. ‘Modding’ and ‘sampling’ are possibly the most characteristic operations of electronic culture, that is, modifications of the programming itself and sampling of all available archival material. These operations go way beyond what was previously comprehensible under the headings of ‘alteration’ and ‘appropriation,’ those beloved by many modernisms. As Dominic Petman and Justin Clemens have argued:

sampling makes an individual anonymity the very condition for all work. Sampling takes place by means of multiples-without-proper-names. There is no central tradition: there are no specific works that everyone has to have understood; there are no names that retain any absolute centrality ... Many works are composed of samples that have been taken as is, slowed down or speeded up, inverted or distorted beyond recognition. Sampling not only recomposes different elements, but different ways of recomposing elements: it is a very complex and labile procedure.¹²

The fundamental operations of modding and sampling suggest that *Second Life* is truly capable of generating spaces and forms that bear no existing relation to our first reality; indeed, are capable of generating new movements within the ‘real world’ itself. This leads us to the problem — and it is a *problem* — of art.

New media arts are only art if they’re not

Can new media arts be really considered ‘art’ at all? In a recent book, in a chapter suggestively titled ‘The Cool Obscure,’ media theorist Geert Lovink poses a battery of related questions: ‘Why is new media art perceived as an obscure and self-referential subculture that is in the process of disappearing? Why is it so hard for artists who experiment with the latest technologies to be part of pop culture or contemporary arts?’¹³ The strange hyper-representational drive that evidently overcomes so many working in the electronic media — the tendency for artists to spend their time ‘constructing’ recognisable if ‘fantastic’ 3-D objects, creatures and environments — exemplifies the tendency of new media to continue with business-as-usual while insisting they’re doing something radically new. So much of the hype surrounding multimedia art praises stuff that is done just as poorly by TV or the theatre. Ditto for the supposed ‘non-linearity’ of electronic diagesis, which has always been available to readers or listeners (dreaming, shifting in and out of the text, and so on). It is nonetheless true that the non-linearity of text or the familiar phantasms of reality are today *patent* — as opposed to merely implicit or potential — and that this patency is in itself a problem for the user. There’s also the ‘geekiness’ of much multimedia art — so much stuff produced with the conviction that, just because it’s using up-to-the-minute hardware, the alleged art thereby produced is also necessarily up-to-the-minute.¹⁴ Or that it’s the true contemporary ‘art’, or art’s inheritor.¹⁵ Why, anyway, do the users of new media want to be recognised as ‘artists’ at all? What is meant to hang on this word? Prestige? Authority? Commercial potential? An acknowledgement of talent or genius that phrases like ‘she’s a good designer’ fails to touch? As Lovink notes, ‘New media artworks are forms in search of a form. They are procedural in the sense of writing material-specific procedures. As test beds they often lack content. Many of the works are neither cool nor ironic, as are so many works of contemporary art. Instead, they often have a playful, naïve feel in that they invite the user to experience alternative interfaces.’ He continues: ‘New media, to its credit, has been one of the very few art forms that has taken seriously the programmatic wish to blow up the walls of the white cube. This was done in such a systematic manner that it moved itself outside of the art system altogether.’¹⁶ Lovink identifies four possible models for new media arts: 1) the creation of a semi-autonomous zone, detached from the established art market; 2) the transubstantiation of new media into art institutions; 3) abandon art altogether; 4) the renomination of ‘new media arts as creativity.’

What makes this all the more difficult is that art underwent an ontological crisis in the 20th century, which can be paradoxically summed up in the following paralogistic proposition. Such ‘art’ at its limits declares that: *if x is clearly art, it is not art; if x is not clearly art, it may be art, but then again it might not be*. You’ll never know for sure, and no possible definition of art will be able to capture what art in fact is. Art is not, or no longer, integrally connected to aesthetics, at least insofar as the former doesn’t have to be beautiful, tasteful, meet any formal or compositional criteria, etc. Dissolution, undecidability and indiscernibility become the hallmarks of ‘art,’ so anything so uncouth and presumptuous as to actually declare itself art without showing itself as at least having passed through the rigours of this paralogism will

certainly never be able to be counted as such. In the meantime, it’s art if it’s at the Biennale or at one or another of the appropriately-ratified galleries about town.

The disquiet of not-quietness

Not quite a game, not quite acceptably a platform for art, then, not quite this, not quite that — this ambiguous, disturbing not-quietness becomes itself an interesting and irreducible feature of *Second Life*. In some way, it was here that Babelswarm began, as an intervention into uncertainty that takes such fundamental mediatic shiftiness as itself offering further possibilities for new kinds of attentiveness. New media radically escalate the evasiveness of negation: perhaps not-art, perhaps not not-art, perhaps not not-art in a different way from the way in which art is not-art or not not-art. The disquietude induced by *Second Life*’s evasive not-quietness directs us to the problematic dislocations that media by definition produce, to their confusion-power, and their communicational transformations.

Language as the ur-medium of politics

In western philosophy, language has always been considered one of the fundamental elements that separate human beings from the rest of the natural world. In fact, spoken language has most often been held up as *primus inter pares* — first among equals — in the giddy realms of human media. It is on the basis of speech that all other media are developed and erected; without speech, no writing, printing, theatre, TV, etc. Indeed, for philosophy, human being is essentially *speaking* being. This feature is not only essential, but is itself integrally bound up with two other features: humans are *mortal*, bound-for-death, and also *political*. As Aristotle puts it in his *Politics*, ‘man’ alone has been endowed ‘among the animals with the power of speech. Speech is something different from voice, which is possessed by other animals also and used by them to express pain or pleasure...Speech, on the other hand serves to indicate what is useful and what is harmful, and so also what is just and what is unjust. For the real difference between man and other animals is that humans alone have perception [*dianthesis*] of good and evil, just and unjust, etc. It is the sharing of a common view in these matters that makes a household and a state.’¹⁷ For Aristotle, any human being who is not part of a political community is better or worse than a human, either a beast or a god. Animals do not speak; gods do not need to speak. Speech, on the other hand, necessitates that ethics and politics are — and will forever be — imperative questions for human beings, zones of irresolvable struggle over the good and the right. Morality is on the other side of, is beyond, the pleasure which humans share with animals. Once it is a question of ethics and politics, then pleasure itself can no longer be the sole criterion by which action is to be judged; yet pleasure cannot simply be junked, either. Media are, to put this more abstractly, and to the extent that they pose problems of being together with others, induce anxiety about the status of pleasure.

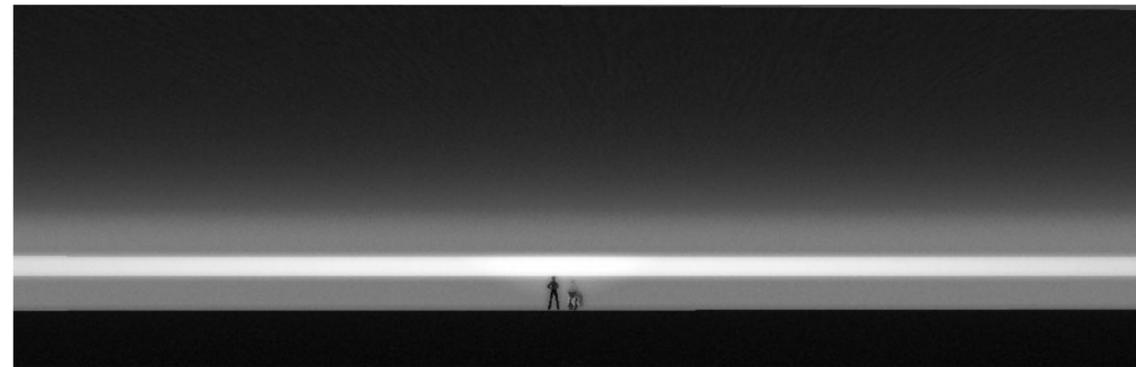
In the beginning was the word

A problem of language is also at the centre of western monotheism. In Genesis, Adam in Eden is given dominion over the other animals:

And out of the ground the Lord God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them; and whatsoever Adam called every living creature, that was the name thereof.

And Adam gave names to all cattle, and to the fowl of the air; and to every beast of the field... (*The King James Bible*, Gen. 2: 19-20).

This Adamic language, God-given, nomothetic, prelapsarian, is evidently pre-political, insofar as it precedes any



Above: Chris and Adam discuss aesthetics prior to terraforming. Below: (Left to right): Adam Ramona, Adam Nash, Christo Kayo, Christopher Dodds, Justin Clemens, and S1 Gaussmann.

human society whatsoever; on the other hand, it is just as evident that the cut between bestial and paradisiacal life is marked and consecrated by naming-power. In this case, naming-power is a genuine power, that gives things their proper names, and, in doing so, becomes the emblem of human sovereignty. Yet it is also this language that was lost after the Fall, in an event to which we will return below: the event of Babel, the fable of the origin of the irreducible multiplicity of mutually incomprehensible human languages.

The engineers of human souls

Yet language does not just name things *in* the world, but creates worlds; in creating worlds, it paradoxically relinquishes them. Language is not simply a depository of experience, but itself an experience. This experience is itself subject to transformation, to destruction and renewal, yet, in such transformations, cannot itself say what is happening — given that the words to say it are themselves becoming something other. Natural languages today seem to be undergoing some kind of radical transformation. Divided by technical and specialised discourses, decentered, global, the familiar multiplicity of languages are under further, unprecedented pressures. One of the consequences of the electronic media has been a transformation of the status of language itself. Even in a single ‘language’ today, words, phrases, idioms, burst into existence and then are gone like ash on the wind. New commodities, generated in unprecedented numbers and kind, surge up and then disappear faster than ever before. Such commodities are designated by strange neologisms, often decided as the result of vast market-research enterprises (think, for instance, of the names of psychiatric drugs); these names are themselves often quickly compressed, sometimes even designed to be compressed, into acronyms, for example; they are produced by multinational corporations or their affiliates, and disseminated through mass-marketing. One very common experience of our contemporary techno-mediated worlds is the patency of incommensurable languages: even within a single language these days, say English, there are so many words, spellings, levels, idioms, accents, tones, specializations, and so on, that it’s hard to say whether genuine ‘communication’ ever actually takes place: even our ‘own’ language often seems to have become a confusing babbling to us, when it is not simply the province of professional or corporate exigencies.¹⁸ This situation of radical chaotic ferment has even induced some linguists to declare that the era of languages is now over, that ‘language itself does not exist.’ Or, alternatively that this situation reveals something previously unknown about language; that, as Jean-Luc Nancy puts it, ‘A language

is always a *mêlée* of languages, something half-way in between Babel as the form of total confusion and glossolalia as the form of immediate transparency.’¹⁹

The mêlée of e-literacy

This unsettled relation, this ‘*mêlée*,’ between ‘total confusion’ and ‘immediate transparency’ has been brought to a new crisis by new media. E-literacy means that ‘Reading,’ ‘Riting,’ and ‘Rithmetic’ is no longer as crucial to socio-political reproduction as it had been until rather recently, but is displaced by the necessity for developing the technical ability to work electronic terminals, to be endlessly re-adaptive to ever-new generations of technical equipment and programming. Not only do you need to have (or have access to) the new hardware, and learn how it works, but you also need to learn how to use each new piece of software, before you can even begin to communicate at all. And when you do, it comes at the price of having to transform your existing communicative routines. Each new device produces its own weird pressures on existing idioms, situations and persons, forcing a constant process of ‘re-education’ at every level: bodily, gestural, linguistic, social, and so on. Take the mobile phone: barely a decade ago, no-one was texting in the ubiquitous way that we do now. Texting changes our routines of communication, its use, its users — to the point that successful texting can often look to those unfamiliar with its conventions like the most retrograde kind of illiteracy. John Agar even invokes an example from Charles Dickens to provide an unexpected kind of prehistory for mobile phone texting. In *Great Expectations*, Pip writes a letter to his friend Joe: ‘With an alphabet on the hearth at my feet for reference, I contrived in an hour or two to print and smear this epistle: “mY deer JO I opE U r krWitE well i opE i shAl soN B haBell. 4 2 teeDge U JO aN then wE shOrl b sO glOodd aN wEn i M preNgID 2 u JO woT larX an blEvE ME inF xn PIP.” There was no indispensable necessity for my communicating with Joe by letter, inasmuch as he sat beside me and we were alone.’²⁰ Quasi-phonetic, limited by scriptural technology and infant vocabulary, deranging the place that both addresser and addressee are in, the letter’s expression is at once baroque and strangely perspicuous, much like the peculiar, ever-shifting, multiplication of today’s geek jargon, in which we find words like ‘grokking,’ whose origins lie in science fiction novels such as Robert Heinlein’s *Stranger in a Strange Land*, or ‘prims’ (primitive objects) and ‘rezzing’ (resolving) as user-slang derived from basic terms from cult films like *Tron* or from basic operations within MUVes themselves.

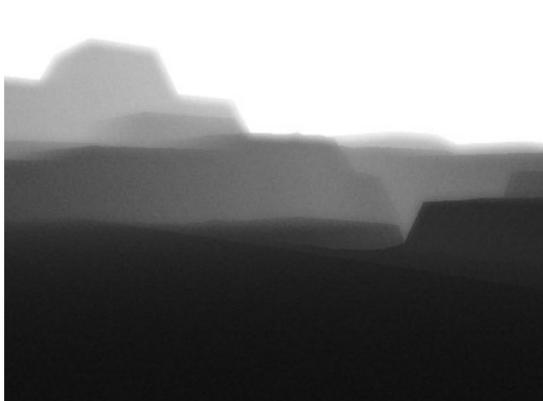
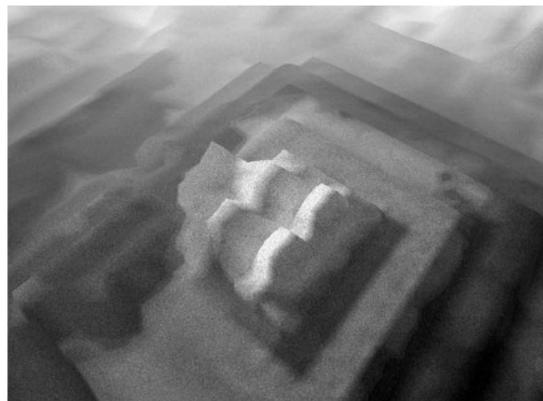
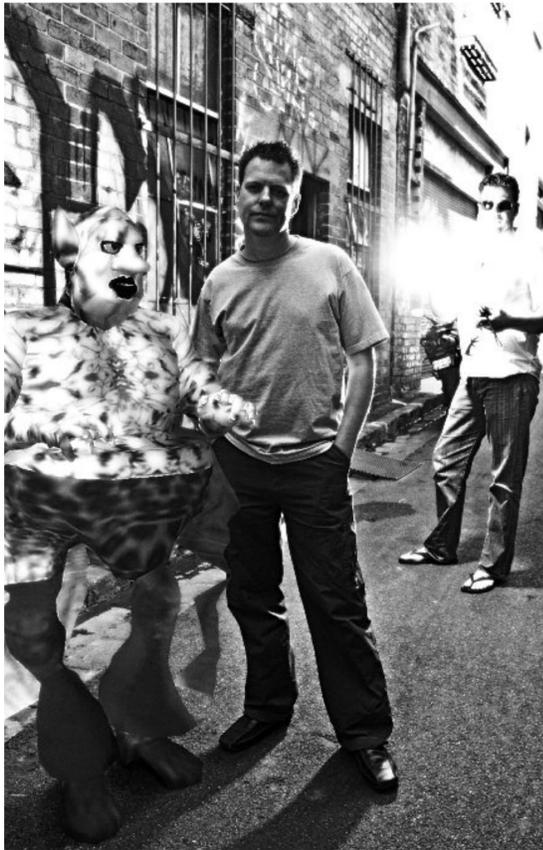
Ever-newer neologisms & the confusion of place

‘Babelswarm’ is itself a neologism that essays to encapsulate something about this new breed of neologism. It is itself a combination of two words, one a proper name, the other a common noun. The name ‘Babel’ comes from the Biblical account of the destruction of the Adamic language in *Genesis* 11:1-9:

1. And the whole earth was of one language, and of one speech.
2. And it came to pass, as they journeyed from the east, that they found a plain in the land of Shinar; and they dwelt there.
3. And they said one to another, Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime had they for mortar.
4. And they said, Go to, let us build us a city and a tower, whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth.
5. And the LORD came down to see the city and the tower, which the children of men builded.
6. And the LORD said, Behold, the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do.
7. Go to, let us go down, and there confound their language, that they may not understand one another’s speech.
8. So the LORD scattered them abroad from thence upon the face of all the earth: and they left off to build the city.
9. Therefore is the name of it called Babel; because the LORD did there confound the language of all the earth: and from thence did the LORD scatter them abroad upon the face of all the earth.

This story is highly significant for a number of reasons. First of all, it’s literally foundational for the major monotheistic religions of the world: Judaism, Christianity, Islam. It is close to being a genuinely global story; moreover, it’s a story about how human beings came to be global in the first place. In the vast history of interpretations of the story, it’s determining that the ‘Babel-event’ was a linguistic catastrophe, in the sense of absolutely severing humanity’s link to the primal language allegedly spoken by Adam in Eden. This primal language was regularly interpreted as having been the real language of things themselves. After Babel, however, we have lost this Adamic naming-power, and have only dissatisfactory and dissimulating words to use, words separated from the reality that they should designate. Language





no longer tells the truth, but necessarily lies of its own accord. After Babel, humans are at once everywhere, yet differentiated, and speaking mutually incomprehensible tongues, despite remaining a single species. We are human because we speak; but we are divided insofar as we do. As Jonathan Sawday says, 'The narrative begins with an idea of unity, but ends in confusion, failure, and dispersal.' The story stages the problems of unity versus multiplicity, harmony versus dissension, locality and dispersion. It's also a story of will-to-power, the ends and limits of human technological ambition, of the thwarting of the desire to reach heaven on one's own terms. It also implies the absence of — or at least an assault upon — Providence and Salvation, of the mockery of God. As John Milton refigures the story in his epic poem *Paradise Lost*:

But God who oft descends to visit men
Unseen, and through their habitations walks
To mark their doings, them beholding soon,
Comes down to see their city, ere the tower
Obstruct heaven towers, and in derision sets
Upon their tongues a various spirit to raise
Quite out their native language, and instead
To sow a jangling noise of words unknown:
Forthwith a hideous gabble rises loud
Among the builders; each to other calls
Not understood, till hoarse, and all in rage,
As mocked they storm; great laughter was in heaven
And looking down, to see the hubbub strange
And hear the din; thus was the building left
Ridiculous, and the work Confusion named.²¹

desert. Thus the play between its own 'centres' (major cities such as Sydney and Melbourne) and its 'regions' (with their own smaller centres like Lismore and Dubbo), itself provides a dynamic for the place unique in the world. Fourth, one cannot underestimate the psychopolitical consequences of the invasion of Australia itself: that modern Australia was established as a prison colony, and at the cost of extraordinary ongoing violence against the indigenous peoples, give Australians a very ambivalent relation to the 'real' place in which they are lodged, knowing that their tenure has been bought at the cost of such an expropriation. All of these factors have technological, economic, biophysical and imaginative consequences for the ways in which Australians interact with virtual environments, from the necessity for major governmental investments in new media infrastructure, to the desires to link the urban centres to its regions using the new technologies.

Anarchitecture & confusion-power

In his gloss on the Babel-fable, the French philosopher Jacques Derrida comments that 'The "tower of Babel" does not merely figure the irreducible multiplicity of tongues; it exhibits an incompleteness, the impossibility of finishing, of totalising, of saturating, of completing something on the order of edification, architectural construction.'

Babel is confusion-power, language that is no longer language, i.e., comprehensible, communicative, technical, unifying. On the contrary, it is dispersed and dispersing, ever-reforming and deforming every expression, every act

A post-convergent concept of post-convergence

The concept of 'swarm' binds together the chaotic profusion of primal atoms, demonic activity, fallen human fanaticism, and the punishment plagues sent by God. The swarm above all designates confusion, disorder, the limitless, the numberless, the mindless, and the godless — but also a genuine worldly power of radical transformation. But it is not simply that the word, cognates and concept have suddenly spontaneously appeared: it is itself a concept that emerges in and out of the convergence (the 'swarming') of a number of different disciplines.²⁴ The 'swarm' is a post-convergent concept which is also a concept of post-convergence. It attempts to rearticulate and resolve a number of age-old problems under the conditions of contemporary communication technologies: the problem of the one and the multiple; of the intrinsic and the relational; of the same and the different; of rest and movement; of cause and effect; of rupture and continuity; of decision and action; of the human and the non- or in-human; of origin and structure; of motivation and teleology.

What is a swarm?

What, then, is a swarm? A swarm is different from a school, a flock, a pack, a group, a mass, a crowd, etc., for a number of reasons. Whereas one can easily discern at least goals, aims or ends to schools and flocks — or even the apparent lack of these in crowds and masses — swarms play between order and disorder, motivation and meaninglessness, in peculiar ways. Swarms are highly unpredictable in their movements: the length, scale, dimension, and velocity of individuals differs from swarm to swarm. The range of communication between the individuals comprising the swarm is much smaller than the swarm itself. No single individual dominates the swarm, which has no overall organising structure, clear aim or end. So what happens in a swarm? How does it start? For what reasons? Why do creatures swarm? There are a number of standard answers. The most brutally Darwinian holds it to be a form of defence against predators. For example, lizard predators are averse to gregarious but not solitary locusts, not only not liking the taste, but becoming possible victims in their turn. Given the vast numbers in a swarm, there's much less chance of any one individual being eaten, as well as more 'eyes' to look out for predators. A swarm can be a defence against environmental change, enabling a rapid adaptation to, say, conditions of extreme scarcity. There are mating and feeding swarms. But part of the enigma of swarms is that these adaptive properties are often bought at a cost so high it may seem to vitiate the benefits: locust swarms, for instance, inevitably starve or are obliterated by natural phenomena. So there is also an adaptive problem posed by the swarm: what's the evolutionary point? Moreover, swarm creatures are often diphasic-creatures, that is, 'split subjects' (there are 'solitarians' and 'gregarious' forms of locust). Swarm creatures have the potential to become other than themselves.

The swarmers' manifesto

Swarms are haunting the planet. If E.J. theatre did indeed invent an idea of the 'human' as a central possibility for action, then the millions of interactors with contemporary post-convergent media are perhaps contributing towards inventing something like the 'posthuman,' a term that has by now achieved a certain notoriety. Posthuman doesn't necessarily mean 'in-human' or 'non-human,' but something that displaces and exceeds many of the qualities that were once held to exemplify humanity itself. In the middle of the maelstrom, however, it is never quite possible to see the real consequences of such inventions. Nonetheless, we can still try to imagine what these might be, offer presentations that anticipate the unknown and the unrepresentable. New technologies never simply supplant, but *supplement* those that already exist. People don't stop writing letters because they can email. Yet this supplementation is always also a transformation: a new technology overturns and reconfigures existing relationships between media. And because such technologies are genuinely new, there are as yet no established ways to help people go about using them. Not only do new technologies shatter what McLuhan called the 'narcissus-narcosis' of daily routine, but they demand a creative response: what can we do with this that could never have been done before? The question is especially pressing when it comes to real-time, electronic, global interactive platforms as *Second Life*. Overwhelmingly complex, extraordinarily diverse, *Second Life* is a kind of *summa* of all previous communication technologies. *Second Life* enables audio, video, programming, and archiving to be deployed in radically unprecedented ways. What sorts of conceptual figures can think such a thing? The very old: the Tower of Babel from the Book of Genesis, which melds the frightening possibilities of technology, language, and power in a single startling image. And the very new: swarm intelligence as an ideal that expresses how innumerable different individuals can produce radical innovations in excess of the powers of any one of them — and in the midst of apparent disorder and confusion, that is, in and as Babel itself. Babelswarm is a project that draws on the most traditional elements of religion, art, and literature, as it engages with the challenges of our scientific and technological age. Letters emerge, cluster, swarm and vanish in a dark electronic landscape; you and your avatars are their progenitors and targets. Log on and interact for yourself.

The swarm above all designates confusion, disorder, the limitless, the numberless, the mindless, and the godless — but also a genuine worldly power of radical transformation.

So: a foundational story about the destruction of foundations, and a common 'experience' of the babble of language — the 'jangling noise,' 'hideous gabble,' 'hubbub strange,' and 'din' without sense — in a mediated cosmos. The very place name 'Babel' is not simply the name of a place, but the name for a place that is no place (or no longer a place), and, as a result, the name also names the fact that names are never simply names, that they never simply designate a simple thing in the world, but mired in confusion: 'Babel' literally means 'confusion.' So Babel is a paradoxical name that literally names its own incapacity to properly name. Into the bargain, isn't the virtual world exemplarily a 'place that is no place' or the digital construction of a 'place-that-is-no-longer-a-place'?

The embryonic remains

Yet first life places don't disappear for all that; on the contrary, they still have their claims and powers that ripple through even the most abstract of virtual worlds. Australians have, for a number of reasons, always been very attentive to the possibilities of new media. First of all, there is the simple fact of having been an imperial colony: colonies, in their very marginality and relative weakness, must always be attentive, often at the cost of violence, to the demands of their masters. The slave always knows more about the master than the master does about himself: knowing what the master wants, what he thinks, how he acts, are necessary survival tactics for the slave; the master, by contrast, is powerful enough to be deaf to what really goes on. Moreover, now that Great Britain is no longer our clear master, Australians are forced to look not only there for models and directives, but also to the US and now to Asia as well, to bigger, older, more powerful global economies. Second, there is the peculiar 'tyranny of distance' that white Australians have clearly so often experienced as a central aspect of their lives: feeling themselves so far from the alleged centre of things, this has made them especially anxious about trying to keep up with the centre, and especially desperate to do so. Australia was never just a colony, but was also an excessively remote colony — and thought about itself as being so. Moreover, this tyranny means that any technologies able to bridge or leap the gaps of distance become very appealing to Australians, who are often among the fastest and most enthusiastic consumers of new technologies. Third, the vast distances within Australia itself, not to mention its peculiar geography and climate, have meant that it has at once been one of the most heavily urbanised of all modern states and one most imaginatively haunted by its hinterlands, the farm lands, the bush and the

of communication, shattering gatherings and gathering shatterings. There is no unity, no One, no Whole or All — even potentially. The languages of Babel are swarm-tongues.

The concept of swarm

This brings us to the concept of the swarm. This concept has recently acquired a certain appeal across an enormous range of fields. In biology: since the explosion of animal ethology and population studies since the 1960s, the phenomenon of swarming has become the focus of a number of important general theories, as well as playing a key role in studies of such phyla as the hymenoptera (wasps, bees, ants).²² In warfare: 'Examples of swarming can be found throughout history, but it is only now able to emerge as a doctrine in its own right. That is largely because swarming depends on a devolution of power to small units and a capacity to interconnect those units that has only recently become feasible, due to the information revolution.'²³ In political philosophy and ontology: we find a deployment of 'the notion of the swarm from the collective behaviour of social animals, such as ants, bees, and termites, to investigate multi-agent-distributed systems of intelligence.'²⁴ The limits of existence are no longer given by primal bands of guilty brothers, nor by highly-organised, hierarchical mass societies of repression, but by stochastic drifts of unleashed particles that sporadically and unpredictably erupt into vast destructive swarms that are both pre- and trans-individual.

In economics and management: 'the idea of "swarm," especially in the context of creativity, promises to become more and more familiar to those seeking to stay on the cutting edge of innovation in the new century.'²⁵ In robotics and artificial intelligence: 'In the 1990s a research team in Finland turned to biological societies as models for developing robots for use in continuous, long-term, autonomous operation in hazardous environments. Despite the lower intelligence of the individuals in societies of bees, ants, and other insects, the group acting together exhibits a higher intelligence and in this way survives in its environmental niche. The team adapted this strategy to a robotic 'society' of multiple small robots with low-level intelligence that work together to complete a task. The individuals communicate only locally, on a member-to-member basis.'²⁶ But also in academic psychology²⁷; neuroscience²⁸; education theory²⁹; in data management³⁰; in media theory³¹; in literary studies³²; and so on and on. Swarms are big in entertainment of all kinds, from horror and science-fiction film to high-art and high-end poetry.³³

