

Developing Architectonic Language Through Digital Observation

Scott Gowans, Richard M Wright

University of Lincoln, Lincoln School of Architecture, United Kingdom

The question for architects is always how to begin.

This proposal attempts to illustrate a design methodology that is characterised by its attention to non-traditional generators.

The focus of the paper is the definition of an innovative design process characterised by the production of an architectonic language through the observation of the ephemeral and the transitory (the quanta of place), and which pays cognisance to the realization of a three-dimensional narrative, placing value upon the products of investigation as well as the resultant design.

As the title suggests the process outlined concerns itself with the examination of the ephemeral, the transitory and the unobserved. The overriding concern is with the recording of fragments of a chosen environment (site) and, the collation and depiction of these findings in an alternative three-dimensional environment (virtual space). This process is only made possible by the advent of computer applications capable of generating the complexity of three-dimensional environments needed to explore the plethora of forms generated by the initial recordings.

This process is concerned with the nascence of architectural expression and the formalising of architectural propositions composed from an individual's interpretation of the 'space between', the obvious and the immaterial, and the phenomena that exist there.

The generators are the things beyond immediate perception. They are the quanta of place.

It is this process of capturing fixed moments in time and space and, translating imperceptible nanomoments and nanoevents, that allows for the development of exploratory diagrams constructed over a backdrop of credible analysis.

These make apparent the infinite possibilities for further transition whilst illustrating the conceptual lineage that links each instance to its antecedents.

The resultant physical forms embody the essence of something transformed. They possess cultural and emotional syntax. They become mementos in the landscape.

Position

„Ultimately, Theory and the avant-garde work that it supported, has proven inadequate to the vicissitudes of the contemporary world. And so today we stand at the end of a historical period“.

Speaks 2000

At this juncture in history, it is apparent that the fusion of technology with information has elicited a paradigm shift in the perceptions, aspirations and adopted methodologies of the creative community. This fundamental realignment of contemporary thinking has led to the re-evaluation and re-definition of traditionally accepted *modi operandi* and has revealed new and unparalleled opportunities for creative engagement.

If the design process can be seen as an unrelenting quest for certainty, it is undoubtedly designers who are most acutely aware of the conflicts inherent in what M. Merleau Ponty refers to as ‘*sense experience*’, for it is our passive association with the real world which represents the ‘intentional tissue which the effort to know will try to take apart’ (Merleau Ponty 1996). This observation supports our belief that in design, innovation and insight are ultimately only possible through an understanding and acknowledgement of, and a necessary dissociation from, the known and the familiar.

Ironically perhaps, it is often designers who, through the process of creative investigation and construction, both confirm and deny the actuality of the ‘here and now’ by simultaneously defining the present whilst alluding to the possible.

It is the act of creative synthesis that allows for the realisation of indefinite possibilities by revealing the potential for transition.

To this end, and in common with other architects, artists and academics, we have become increasingly intrigued by the potential of computer technologies to elicit new perspectives and to facilitate a required disengagement from real-world parameters.

It is the attainment of this disconnection at the very

earliest stages of the design process, and the consequences of such disconnection, that provides the focus for our investigations.

In the use of available and appropriate technologies our approach displays a resonance with that of architect/artists Diller+Scofidio whose interests lie „...in the practice of implementing technologies in specific applications for explicit consequences and effects“, (Schafer 2003a) and who are optimistic about the use of ‘non-efficient’ technologies „...not to project an idealised future but instead to reconfigure a very real present“ (Schafer 2003b). We have therefore, initiated a relationship with technology that does not purport to address every difficult issue associated with the production of the built form but which is one that we feel can make a valid contribution to the advancement of any design discipline and can successfully address the issue of how to begin.

Nonetheless, in the broadest sense, our investigation of technologically-based methods of generating architectural form *can* be seen as not only vital to the evolution of architecture as an art form and as a potential mechanism for generating successful human environments, but also as a means of addressing issues of uncertainty inherent in the creative process.

Paradoxically perhaps, we are proposing a resolution to the quest for certainty in design by promoting engagement with uncertainty and developing a fluid relationship with technology.

The particular objective of our studies has been to define a design process characterised by the production of architectonic language through the observation of ephemeral, transitory, place-particular events and their *effects*.

We refer to these immaterial phenomena as the *quanta of place*.

Our developing methodologies utilise the potential of digital technology to examine microscopically, place-specific events or artefacts. This in turn can facilitate a disconnection from the arid, traditionally accepted determinants of initial place-assessment

(site analysis), and foster the creation of „...unexpected non-linear connections between diverse phenomena“. (Hill 2000) For us, it is this area of ‘productive overlap’ realised through the revealing of place-specific phenomena that is of interest.

Process

Within our design-studio environment the word ‘evolve’ was, and is continually used, with regard to the development of architectural and installation projects. This in itself became a starting point for our investigations.

Our early studio endeavours focussed upon providing a disconnected ‘starting point’ for a design by revealing the subliminal hidden order of an often-dissociated two-dimensional composition.

The process of revealing this *hidden order* was generally characterised by the systematic deconstruction of a planar source and its subsequent reconstruction as a three-dimensional object. We became increasingly aware however, that whilst this process was successful in producing polemic and stimulating design proposals, it almost invariably exhibited an inability to respond in any meaningful way to the plethora of issues specifically related to site, context and programme; these resultant schemes were in essence ‘one-liners’.

Our attention then focussed upon the refinement and evolution of the studio design process in order to evolve methodologies that provided for seamless disconnection, experimentation and context-specific re-engagement.

Our initial attempts to address these issues were characterised by the addition of formal site investigations as a concurrent stream of analysis.

It is important to note however, that even at this early stage, the observation of site phenomena was not undertaken solely as an assessment of the physical attributes associated with a site, but instead focused primarily upon the ritual, events and the imperceptible ‘prime movers’ associated with any given location.

This approach produced interesting results. However, the resultant designs (although generally challenging), invariably embodied conflicts as a result of being a hybrid of two separate streams of investigation.

An ideal solution appeared to be the development of a process that allowed for the crystallisation of design intention through the manipulation of recorded observations but which, in addition, could provide a framework within which formal proposals could necessarily mutate in response to the influence of real-world parameters.

With this in mind, the studio emphasis focussed upon the development of methodologies that nurtured the emergence of an experimental thought-stream robust and rich enough to invite continual re-interpretation, mutation and necessary evolution, when responding to any new condition or instance applied during the process of design development.

This period of re-focus coincided with a developing interest within the studio in the application of computer technologies to assist the design process, in particular, the potential use of digital imagery and the capacity of computers to record vast amounts of information.

We had been aware for some time that computer applications, in many instances, had been employed simply to rationalise the generation of perpetually novel, permanent built forms in unresponsive ways. Our intention therefore was not to emulate this process but fully to utilise the potential of new technologies for spacio-visual exploration and integration.

Within the realm of architectural research we already knew of the generative computer modelling programs being developed at the University of East London by Paul Coates, applications that effectively ‘breed’ architectonic form from user-defined parameters seeded within the program. This approach was rejected because it did not appear to offer real insights into how computer applications could help address the plethora of extremely complex building design issues.

However, this did lead us to the investigation of contemporary paradigms developed in other fields specifically to address issues of creation and evolution. We were particularly intrigued by the theories of ‘*emergent phenomena*’ and ‘*emergent systems*’ as proposed by John H. Holland and Kevin Kelly, and of the idea of applying such models to the design process.

Holland contests that, ‘Emergence is a ubiquitous feature of the world around us’, and that a characteristic of emergent systems is where recognisable, recurring and „Persistent patterns at one level of investigation...become building blocks for persistent patterns at still more complex levels“. (Holland 1998) The revelation of recognisable and persistent patterns and features is pivotal to the study of emergent systems. In such systems, higher-level complexity arises from the accretion of vast numbers of low-level actions.

The tracing of these imperceptible low-level actions to reveal ‘meaningful’ patterns on a larger scale appealed to us, and immediately appeared to have great potential in an architectural context if applied to the observation and understanding of a site.

These aspirations provided a new focus for our existing design-studio practices and dovetailed seamlessly with our use of computer technology.

Subsequently, the generative phase of our design investigations focussed upon capturing fixed moments in time and space, and translating often-imperceptible micro-moments and micro-events into unique physical forms.

A further key development that emerged from this investigation was our reinterpretation of what constituted a „non-site“ environment (de Oliveira et al 1994). Originally, non-site as defined by Robert Smithson meant gallery space, a place where artefacts were transported to and arranged, in order to create a representational model of site. For us, non-site became a computer-generated composite, a „counterfeit world“ (Dawkins) in Cartesian space (as opposed to virtual space which implies an acceptance of some, if not all, real world parameters)

in which to explore and test our propositions.

Practice

„When a system of „meaningless“ symbols has patterns in it that accurately track, or mirror, various phenomena in the world, then that tracking or mirroring imbues the symbols with some degree of meaning – indeed, such tracking or mirroring is no less and no more than what meaning is. Depending on how complex and subtle and reliable the tracking is, different degrees of meaningfulness arise“.

Hofstadter 2000

The initial phase of our investigations is concerned therefore, with the determination of the ‘essence’ of a particular environment (*site*) through the systematic recording and analysis of ‘*place fragments*’. These fragments may or may not be manifest as connected elements to the site. Our intention is to reveal the effects of both ‘obvious’ and ‘immaterial’ phenomena at micro-pattern level in order to provide a basis for valid, diverse experimentation. As this process of analysis is unrestricted, it is designed to influence, permeate and inform concurrent, embryonic streams of programmatic and technological investigation.

We then engage in a process characterised by the transposition and reconstruction of collected data into our ‘non-site’. This allows for the dissection, mutation and synthesis of visual material with the intention of producing a wholly new and unique matrix of *effect relationships* that constitute a recognisable and meaningful macro-pattern useable as a starting point for the development of design proposals.

This experimentation is not carried out in isolation; it is informed and transformed by the dynamics of engagement with intertwining strands of investigation. The transposition from a non-site environment to a real-world context can be a difficult and protracted process. Project-specific factors are gradually fed into the process to define the framework within which the design must evolve. At specific junctures

each exerts a 'field of influence' upon the 'conceptual ribbons' underpinning the project, resulting in possible deflection and redirection.

The final iteration in this process is a full engagement with all the factors that shape a design proposal. Fundamental to this is the move from non-site to site, and the acknowledgement of hierarchical real-world criteria.

Project

0086:11 - Landform Observatory - Ireland

In accordance with the design practice outlined, this project developed in response to concurrent strands of investigation and experimentation. In the interests of clarity only *one* strand of the investigative process has been illustrated.

0086:11:PB

The project brief was to design a visitors' centre within the landscape of the Burren, a limestone landscape stretching towards the Atlantic Ocean on the west coast of Ireland. As part of the brief the building had to incorporate a safe route through the landscape whilst providing shelter and short stay accommodation for those wishing to explore the Burren.

The essence of the project was to allow the frequently changing weather conditions to inhabit the building as a fundamental and transient influence to the experience of the user. The building's form is a series of connected paths that carve through existing fissures and cracks in the rock, being enlarged at intervals to provide shelter and accommodation.

The building signposts the route it follows with a series of fractured roof structures; a combination of voids, paths, pools and habitable spaces.

The landscape of the Burren is shaped by well-understood phenomena; the actions of wind, water and temperature change. These actions are in themselves not visible. The intention was to make these phenomena more apparent through the documentation of their *effects*. Very simple solutions

were found; perhaps the most beguiling was digitally to film a piece of string flapping in the breeze. This generated a mapping of the effects the wind has upon an object within that landscape. These are, of course, common effects and similar patterns that will occur in any location with the same piece of string. However, in other locations the effect of wind is not likely to be as profound or to be a prime mover in forming that site and environment. This investigation informed proposals that elements of the building would sit above the landscape and in the airflow. It would therefore be desirable to have these elements formed or informed by this prime mover.

Still images from digital video recording of a length of string flapping in the wind. The recording lasted for 1:04 minutes with a total of ten recordings in different locations around the site. When the sequences were watched repeatedly it became apparent that there was a consistency of movement and a repetition of roughly similar patterns. A process of dissection was then undertaken, reducing the number of recordings to one and then cropping the remaining clip to a 2:00 second sequence. This radical reduction was necessary to make a translation and manipulation of the resultant patterns possible.

At this point the diagram was also inverted so what became visible was the space between lines. This allowed each linear path to be imbued with the form from the one preceding and the one following. The lines became a series of connected potential spaces or solids.

Conclusion

Whilst research at the very early stages of the design process is often speculative and seldom leads to methodologically valid solutions, the process we have outlined attempts to address these issues through its attention to the non-traditional generators, and by facilitating the evolution and mutation of design proposals in response to the influence of real-world parameters.

As illustrated, our investigations focus upon the



Figure 1
0086:11:A

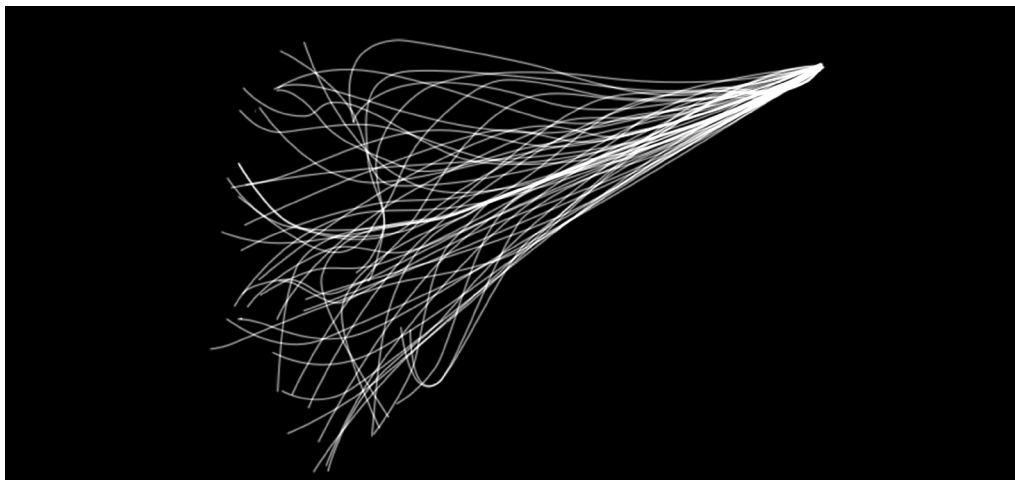


Figure 2
0086:11:B Mapping of 2:00
second clip. No spatial separation.

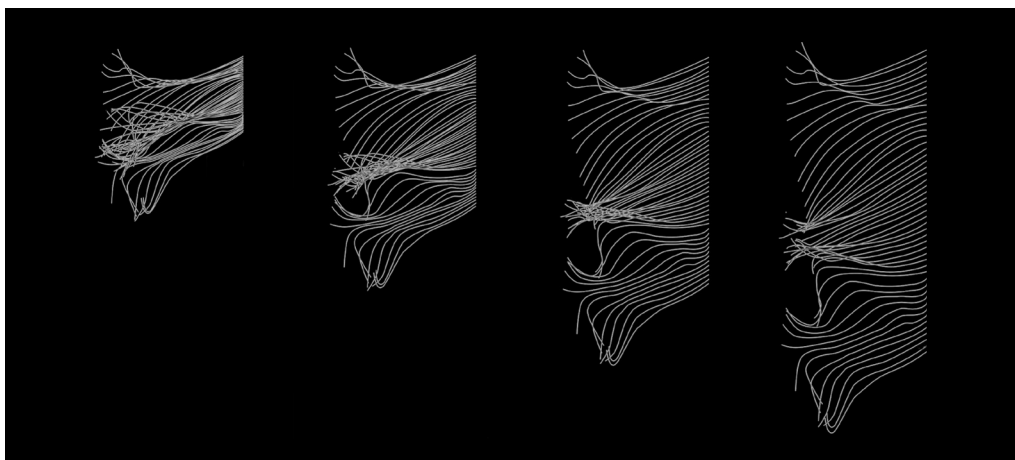


Figure 3
0086:11:C Spatial separation
on x and y-axis.

nascence of architectural expression and the formalising of architectural propositions from the interpretation of the space between the obvious and the immaterial, and the phenomena that exist there.

We believe our adopted position to be distinct and vital, and capable of generating robust design solutions appropriate to the spectrum of architectural endeavour.

Our approach gives emphasis to the conceptual corollary that underpins all considered design work whilst challenging traditionally accepted methods of project evolution.

It attempts to define mechanisms for clarifying creative intention and initialising design-language development through experimentation in order to allow for the revelation and reconstruction of key immaterial generators and their effects.

In comparison, most architects rely upon a sense

of common practice and a routine reworking of the same set of slowly evolving icons married to site, program and available technologies to generate a design solution.

We are aware that in currently emerging environments the often-unenlightened application of continually emerging technologies is forcing a break with certain aspects of the past. We feel that it is vital that everyday associations held to be 'deeply known' within the collective subconscious, are treated as a reservoir of catalysts for any new creative endeavour.

If, as Alejandro Zaera Polo believes we „no longer live in a single world...but a world made of worlds, each governed by its own set of conjectures about the truth“, (Speaks 2000) then the revelation, manipulation and displacement of innately understood signifiers from specific contexts to new associations

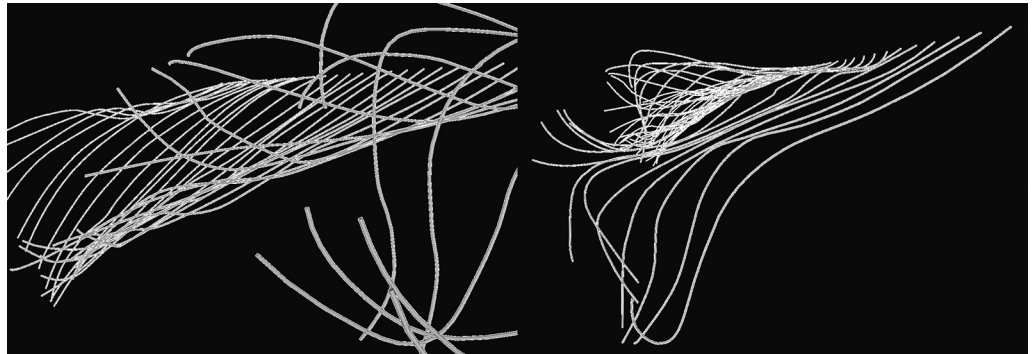


Figure 4
0086:11:D Spatial separation on x, y and z-axis.

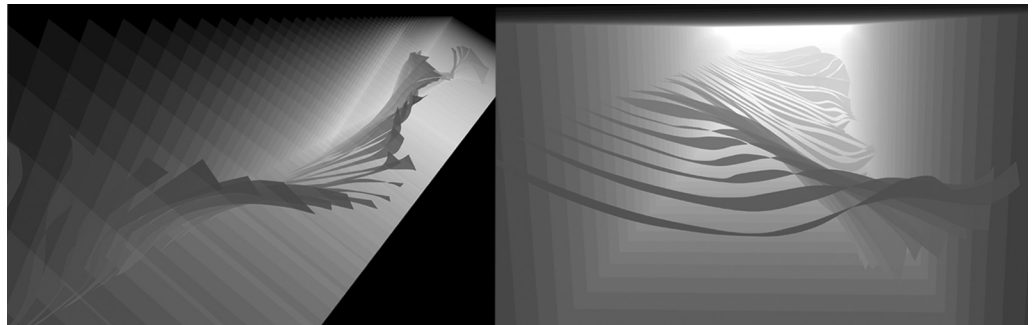


Figure 5
0086:11:E



Figure 6
0086:11:F Non-site manipulation of resultant forms.

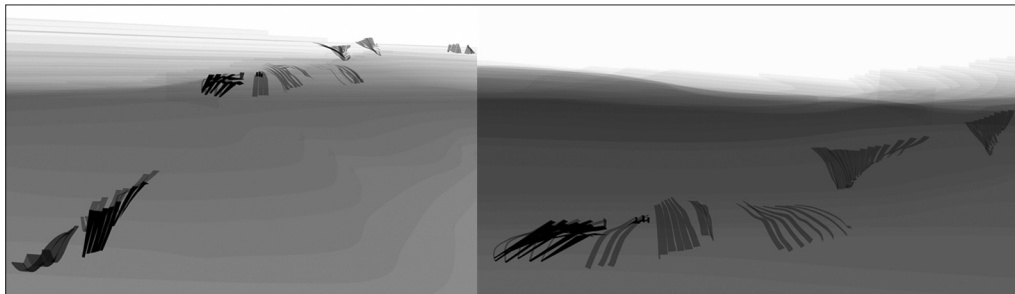


Figure 7
0086:11:G Testing forms and site.

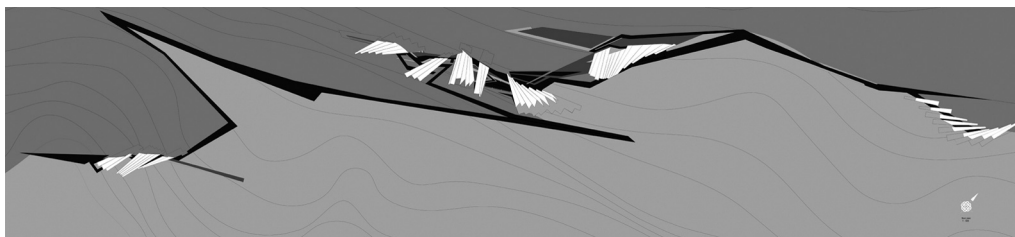


Figure 8
0086:11:H Building design, site plan.

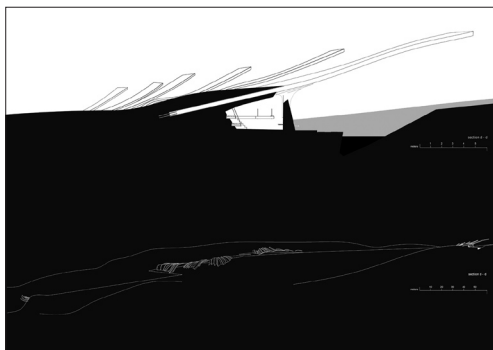


Figure 9
0086:11:J Section.

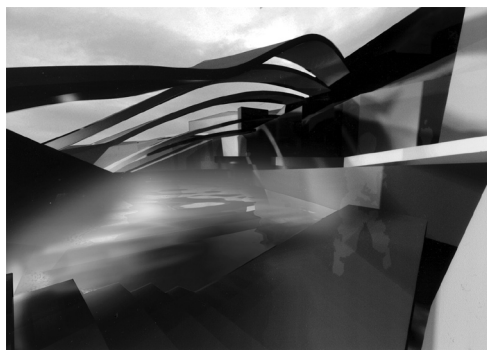


Figure 10
0086:11:K Visualisation.

will lend them an abstracted sense of the contextual, and provide any resultant formal proposition with a resonance of the “strangely familiar” (Ratray,Hutton 2000). They will become mementos in the landscape.

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- Information on the work of Paul Coates and The Centre for Evolutionary Computing in Architecture (CECA) can be found at <http://www.uel.ac.uk/ceca>

Acknowledgements

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