Everything that's worth understanding about a complex system can be understood in terms of how it processes information.
— Dr Seth Lloyd, Professor of ME, MIT

Versioning is an operative term meant to describe a recent, significant shift in the way architects and designers are using technology to expand, in time as well as in territory, the potential effects of design on our world. A 'second generation' of digital architects and theorists are emerging who have placed an emphasis on open models of practice where the application of technology promotes technique rather than image. The content within this issue of *AD* is meant to be direct and straightforward, although versioning is an open, gestural idea and the range of contributions should signal the pluralistic nature of the concept. Versioning can be seen as an attitude rather than an ideology. It allows architects to think or practise across multiple disciplines, freely borrowing tactics from film, food, finance, fashion, economics and politics for use in design, or reversing the model and using architectural theory to participate in other problem-solving fields. Versioning is important to architects because it attempts to remove architecture from a stylistically driven cycle of consumption.

The computer has enabled architects to rethink the design process in terms of procedure and outcome in ways that common practice, the construction industry and conventional design methodologies cannot conceive of. This, in turn, has had an equally profound impact on legal practices, insurance liabilities and design/production partnerships, thereby initiating a restructuring of the traditional relations of power, responsibility and accountability in design. Versioning implies the shifting of design away from a system of horizontal integration (designers as simply the generators of representational form) towards a system of vertical integration (designers driving how space is conceived and constructed and what its effects are culturally).

Versioning relies on the use of recombinant geometries that allow external influences to affect a system without losing the precision of numerical control or the ability to translate these geometries using available construction technology. It advocates the use of vector-based information over pixel-based simulation and representation:

representation : modelling :: modelling : versioning

While simulation remains a useful formal estimate of future organisational strategies, versioning of vector-based information allows immediate results to be transformed and refined as the previous tests feed additional data through the framework of intentionality. Both the desired design objectives and methodology thereby become simultaneously accelerated and adaptive.
Traditionally, the term implies the copying of a type or original. Yet, in this context, versioning should not be understood as originating from a singular identifiable mode, prototype or master form in which all variations or evolutions can be measured by, or traced to, one specific source. In fact, versioning no longer relies on the necessity of the archetype to be manipulated and changed over time with the end goal of producing a master type for eventual mass production. Instead, versioning can be characterised by a set of conditions organised into a menu or nomenclature capable of being configured to address particular design criteria. The primary source is constructed from a set of detail types comprising a menu, and organised around a collection of specific detailed actions capable of evolving parametrically to produce specific effects or behaviours.

For example, the nomenclature of automobile highways offers a model to help illustrate this point. There is no original source highway or correct proportional system based on the image of road or speed. Most highways are made up of components such as ‘loops’, ‘spurs’, ‘plains’, ‘bifurcations’ and ‘crossovers’. These highway menu-types change their position relative to desired traffic behaviour in order to optimise movement efficiencies across changing terrains. No base prototype exists, nor is there an image-based set of relationships underlying the design. Instead, design decisions are based on an organisational strategy capable of responding to the effects of speed, turning radius, gradients, congestion and the landscape, to create a fluid behaviour of variable movement. The highway can be regenerated continuously to adapt to changing manufacturing techniques, yet maintains its clarity as an object-space-time construction.

The question of what is original or a copy is no longer of any relevance. By not relying on a formal apparatus or protoform, the practice of versioning is capable of responding in a nonlinear manner to multiple influences. By developing an elemental vocabulary of conditions in the planning stages for each project or project type, the practice of architecture becomes less about a search for a specific overriding form and more about a specific formal means of production to address variable conditions.

In the work of Office dA, we can see their use of the brick as a building component to test the notion of aggregation and seriality of construction much in this way. In their Tongxian Arts Centre project, the potential of the

exception to the singular element creates possibilities for new resolutions of surface, edge, corner, circulation and tectonics. The geometry of the structure moves past the simulation of folding and pliability in image and towards a method of design and execution. Ingeborg Rocker places the argument of originality, difference and emerging technologies within the context of the corporate identity machine to question versioning’s role in the production of form. She questions the desire, or plausibility, of design’s relationship to representation when new models of practice are allowing architecture to become an informed result of differentiated effects. Another key element of versioning is its ability to question time and its relationship to other cultural processes. In his essay, Ed Keller firmly positions recent technological advances in fields as disparate as biotechnology and DJ remixing, and links them to a discussion of ‘new forms of time’ which emphasise the potential effects versioning can have on the city/machine and the speed at which a self-regulating mechanism for temporal/cultural control emerges. In this way, Keller argues that versioning advances the ‘genetic substance’ of architectural design.

Versioning also extends to methods of practice where nontraditional use of architectural theory is
appropriated by other disciplines. Anna Dyson discusses the advances in the field of industrial ecology, where methods for disassembly and reuse can be built into the design process through techniques of versioning. She continues with a projection of emerging advances in biotechnology that shift the economic paradigm for the development and gestation of materials. Panelite’s materials-research work exposes the process of making new building products from a singular technique while allowing for difference at multiple scales. Its products seamlessly integrate both theory and technique to create an aesthetic that is not image based. Similarly, the work of inventor David Levy suggests how design solutions are discovered by using the external actions which will act upon the device while allowing for continuous feedback from both the manufacturing and organisational requirements. The ability to see the device, understand it without using directions and fabricate it quickly, drives a resultant aesthetic that is highly specific yet more inclusive.

If versioning operates at different scales within a design, it should also operate at different scales of practice. Helen Castle’s interview with three partners of Euro Happold Consulting Engineers begins to examine how a 780-person design consulting firm uses new technologies and theories of versioning to operate on multiple continents and on projects ranging in size from 2000 to 200 million square feet. At the same time, Vishaan Chakrabarti writes an essay on the political manifestations surrounding the notion of the sole practitioner and the corporate practice in this new climate. How can these new techniques allow smaller firms to take on larger projects, and what types of alliances are the result of these shifts of scale and responsibility? And, if versioning allows small firms to perform large, can the corporate behemoth suddenly act light and tactical?

Rick Joy, William Massie and System Architects present some of their recent work, projects in which they are heavily involved in the building of their structures, allowing them to control all aspects of the work. Versioning here is instrumental in allowing the practice of architecture and design to return to a vertical organisational structure similar to the ‘master builder’ of the Renaissance. Their invention of new forms of digital drawing and manufacturing is closer to Brunelleschi’s systems of variable brick models than it is to the image-generating machines of the architects of the ‘dot-blob bust’. When building the Duomo in Florence, Brunelleschi modelled multiple brick shapes and sizes using wooden moulds constructed from versioned templates to respond to specific loading conditions when assembled in different combinations. No singular or master brick form is used to address the overall static behaviour throughout the structure. The work of the architects profiled in this issue can be local or international, but the designers use the technology to create a true integration of the process of construction no matter what space/time conditions exist. They are using innovative building materials and construction techniques to expand the possibilities of design and effect, and to keep all aspects of construction under their control. In contrast, when the blob is left in its rendered state it leaves us flat, no matter how sophisticated are the continuous recalculations of the Nurbs geometries. The form may use every data-crunching animation technique to process multiple variables, but the result is too often all image. The texture maps cloaking them are similar to the banal skins of consumption architecture. Without making the intentional connection between the digital geometries on the screen and the execution of a technique to produce that geometry at building scale, the work seems limited.

Can versioning alter the distinction between the ‘aesthetic object’ and the ‘theoretical text’ and collapse this distinction where the object and the text are one and the same with the technique of manufacturing? Can the forces that make the object, both in the generation of the broad strokes and specific resolutions, combine with an intelligence of fabrication to become a ‘process product’? Here the form, the forces that shape it, and the assemblage of materials in which we execute the ideology are part of the same gesture. This is not a call to replace the human act of design with algorithms, but a critical search for a common language between design and execution. The resulting control of these processes empowers the architect to take on the role of the translator of unforeseen relationships simultaneously in imagined and real space. The techniques and processes are not far off in the future, but available right now. Are you ready?