An Integrative Moment

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The ACADIA 2011 Annual Conference explores integrative trajectories and areas of overlap that have emerged through computation between design, its allied disciplines of engineering and construction, and other fields, such as computer science, material science, mathematics and biology. The conference highlights experimental projects in which methods, processes, and techniques are discovered, appropriated, adapted, and altered from elsewhere, and digitally pursued.

The aim of the conference is to project a fundamentally different attitude towards collaboration, one that needs not be limited to the professions and disciplines comprising the building industry. It does so by featuring the work of designers and researchers who engage design as a broadly integrative endeavor by fluidly navigating across different disciplinary territories, and who deploy algorithmic thinking, biomimicry, computation, digital fabrication, material exploration, and/or performance analyses to discover and create processes, techniques, and products that are qualitatively new. Some take scientific and engineering ideas as starting points of the design investigation. Others are embracing mathematics and geometry as a rich source of ideas for articulating form, pattern, surface and structure in architecture. Many are increasingly looking for inspiration in nature to discover new materials and new material behaviors, which can enable an architecture that can respond dynamically to changing environmental conditions.

The conference projects integrative design as an emerging trajectory for architecture as it enters a post-digital phase, embracing ideas, concepts, processes, techniques, and technologies from elsewhere - just like before, only more so. In probing architecture's ability to use computation for integrative purposes, the conference assumes an explicitly open and productive stance. Solutions are queried not only for connections that emerge, but also for new spatial qualities and effects. The aim is to continually induce an open-ended, opportunistic, yet integrative exploration of new possibilities in architecture.

Structured around the topic of integrative design, the conference consists of interrelated activities taking place between two cities. In Calgary, the conference is prefaced by two days of intensive software workshops culminating in a panel discussion on *Integrative Parametrics* that includes industry leaders in software development and application. Following the panel discussion, an exhibition at the EVDS Kasian Gallery features peer reviewed projects, winning entries from the ACADIA 2011 Design + Fabrication Competition sponsored by FLATCUT, a curated project exhibition titled *Integrative Sensibilities*[1] and the latest work produced by the Laboratory for Integrative Design.

Conference participants then head westward for four days of presentations at the Banff Centre in Banff National Park. There, conference attendees participate in these sessions featuring peer-reviewed design research investigations:

Computation, Formation and Materiality explores principles behind complex material systems, emergent material behavior, its simulation and potential as a generative design driver.

Fabrication and Production Techniques features new form finding techniques, innovative CNC manipulation of planar materials, rapid prototyping, and explorations of connections between fabrication constraints and design intent.

Integrative Tools and Techniques investigates links between programming languages, synthesis of natural and parametric processes, ways of embedding information into material systems, tools for structuralizing architectural skins, and data flows between digital and physical worlds.

Interface and Immersion focuses on linking digital and analog domains, workflow restructuring, portable immersive environments, gesture-based interface, post processing analytics, and intuitive parametric control.

Form, Geometry and Complexity probes genetic algorithms and agent based behavior, interactive resolution of complex geometries, mutable techniques for integration, and relationships between mathematics and architecture.

Kinetics, Matter and Computation engages programmable matter, "soft" kinetic systems, embedded responsiveness in materials and buildings, and modular reconfigurable architecture.

Information Management and Integration addresses emergence and placemaking, multimedia architecture, and transdisciplinary prototyping.

In addition to peer reviewed presentations, seven speakers are invited to broaden the discourse at the conference, demonstrating the range that integration through computation has across the field of design at large. **Michael Weinstock** identifies integrated and intelligent infrastructural systems as critical for continuing human expansion across the planet. **Garnet Hertz**, a Fulbright Scholar and contemporary artist, explores the distinction between utilitarian and hedonized DIY practices in digital culture. **Marcos Novak** provides a manifesto "toward the computational composition of the new polis". **Lisa Iwamoto** explores different material methods and techniques in digital design and fabrication. **Chuck Hoberman** is enabling more environmentally attuned buildings through the development of adaptive building envelopes and structures. **Michael Speaks** describes the economical and societal values that architecture should address within a post-bubble environment. **Joseph Rosa** speaks to the hyper-linked nature of contemporary projects and the concurrent expansion of architectural territory across disciplines. These presentations are intentionally juxtaposed in their thematic content, scope and scale to provoke and enable emergence of connections and intersections that are not immediately apparent or even plausible. They also serve to illustrate the immense breadth of integrative discourse in design and its inherent capacity to provide for new, unexpected trajectories in design research.

Fundamental to integrative discourse are notions of adaptation, alteration, corruption, contamination, misappropriation, etc. of ideas, methods, techniques and technologies. As such, we hope that the conference activities and their documentation serve to perpetuate an ongoing process of mixing, recombination and experimentation that challenge the very conventions that have informed ACADIA's long design research history.

On this 30th anniversary of ACADIA we might then consider not only how this conference addresses integration (through) computation, but also how in the past 30 years design research has continued to evolve, such that we have arrived here now, if only for a brief *integrative* moment in the Canadian Rockies circa October 2011.

Notes

1. Curated by J. S. Johnson, V. Parlac and J. Taron, *Integrative Sensibilities* features the work of David Benjamin, Marc Fornes, FPMod, Gage Clemenceau Architects, Maria-Paz Gutierrez, Alvin Huang, Stephen Ma, John Marshal, and Skylar Tibbits.