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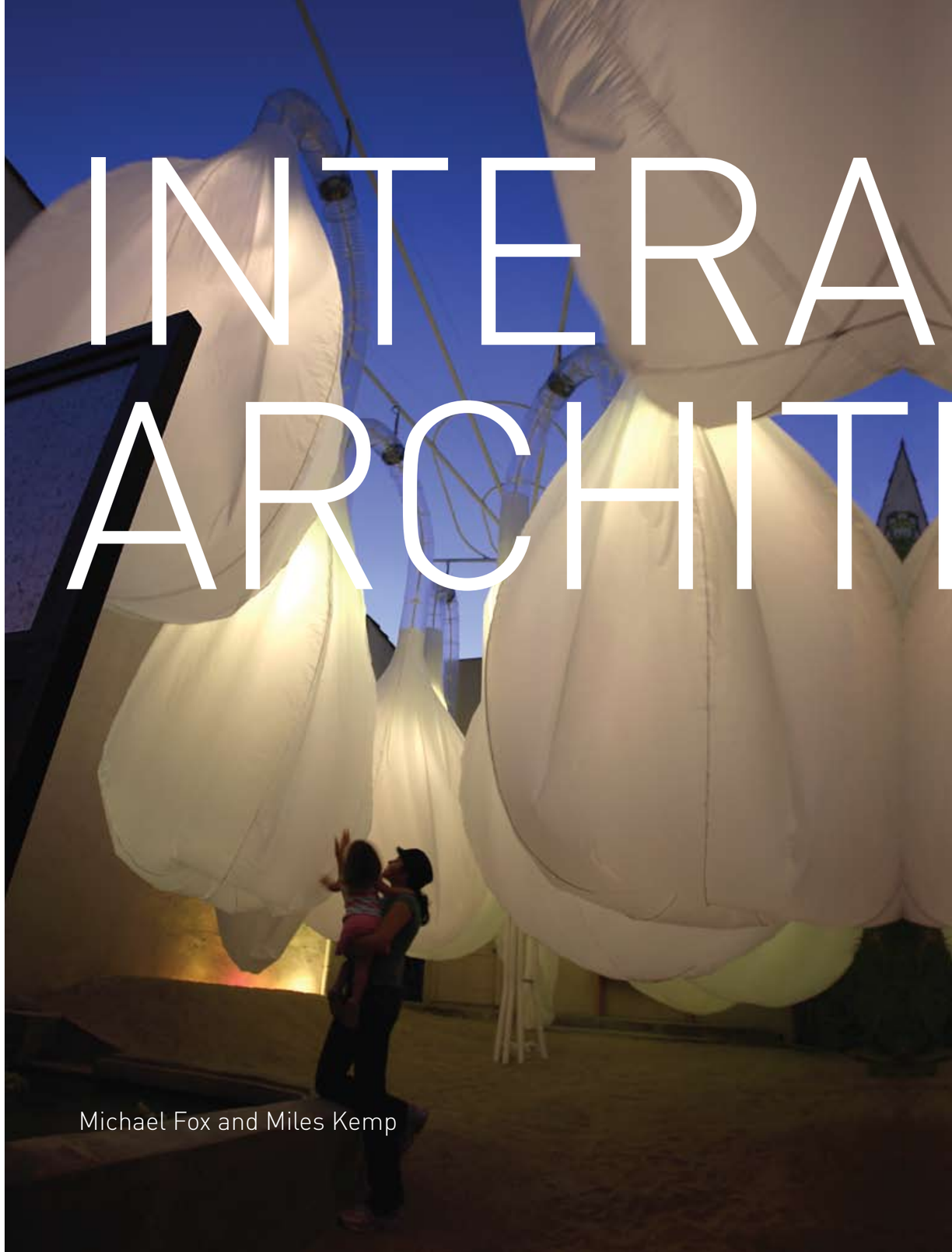
ACTIVE TECTURE

Every year, a bevy of new phones, games, televisions, and electronic reading devices ride into our lives on a tidal wave of interactive hype. These products, while handy, primarily confine their interactivity to the surfaces of screens, not exactly the kind of world-changing transformations we've been promised. In *Interactive Architecture*, authors Michael Fox and Miles Kemp introduce us to a brave new world where design pioneers are busy creating environments that not only facilitate interaction between people, but also actively participate in their own right. These spaces—able to reconfigure themselves in response to human stimuli—will literally change our world by addressing our ever-evolving individual, social, and environmental needs. In other words, it's time to stop asking what architecture is and start asking what it can do.

Interactive Architecture is a process-oriented guide to creating dynamic spaces and objects capable of performing a range of pragmatic and humanistic functions. These complex physical interactions are made possible by the creative fusion of embedded computation (intelligence) with a physical, tangible counterpart (kinetics). A uniquely twenty-first-century toolbox and skill set—virtual and physical modeling, sensor technology, CNC fabrication, prototyping, and robotics—necessitates collaboration across many diverse scientific and design-based communities. *Interactive Architecture* includes contributions from the worlds of architecture, industrial design, computer programming, engineering, and physical computing. These remarkable projects run the gamut in size and complexity. Full-scale built examples range from a house in Colorado that programs itself by observing the lifestyle of the inhabitants, and then learns to anticipate and accommodate their needs, to a workspace that transforms its lighting, acoustics, and privacy parameters based on the occupant. *Interactive Architecture* examines this vanguard movement from all sides, including its sociological and psychological implications as well as its potentially beneficial environmental impact.

Fox and Kemp

INTERACTIVE ARCHITECTURE



The value of such real-world understandings is a huge asset to the field at large. Such projects, which are essentially usable prototypes, are great for testing specific ideas, but the real test is to see how the environments perform with users that inhabit or interact with them every day.

designed in such a way that they can be reused or resold for future projects or to the IA community at large.

A disadvantage of very specific client-driven initiatives is that in many cases the interactivity is largely focused on satisfying the idiosyncratic desires and needs of a specific client. This does not mean that these systems should necessarily be designed to only accommodate the desires of one particular group—in fact, the point of these systems could be to learn how to interact with individuals through varied interactions learned over time—but it does mean that one voice is the driving force behind a particular project. In many cases, to satisfy client goals, many projects become very specialized and it becomes increasingly difficult to reuse components of these projects for other projects that necessitate generalized adaptive behaviors.

Corporate Initiatives

Corporate projects usually consist of projects that are realized at a larger scale than many other types of IA projects. A number of advantages and disadvantages can be associated with these types of projects. These projects tend to be designed with a broad audience in mind and are typically built as multiuser projects. These projects tend to exist within a large public context or urban scale. This scale and context also positively contributes to the amount of exposure that these types of projects receive, which is usually much higher than other types of IA projects. > **Fig. 04**

Corporate projects, because their intended audiences are that of a large number of users, typically exist in larger corporate settings, stores, or in densely populated urban contexts. Such projects are developed with the intention that they will be used by multiple users

>**Fig. 04:** Electroland LLC, Cameron McNall and Damon Seeley, *Target Breezeway.*

Corporate projects, because their intended audiences are that of a large number of users, typically exist in larger corporate settings, stores, or in densely populated urban contexts. Such projects are developed with the intention that they will be used by multiple users at once.

at once. This type of interactivity tends to bring people together and collectively engage the general public. This collective exposure is valuable for IA because it helps usher ideas of interactivity into a much larger audience typically accustomed to interactivity on an individual basis associated with product design and digital media. > **Fig. 05**

The budget for these types of interactive projects also tends to be much larger. This usually translates to the potential for more experimentation early on and the development of refined prototypes used to sell the initial ideas to corporations to get more funding. These types of projects, if done well, also offer the potential to develop long-lasting working relationships with larger corporations that can lead to embedding ideas of interactivity into the branding and general architectural aesthetic of public-facing products and environments. Such client relationships also contribute to unprecedented levels of exposure for interactive concepts. This heightened exposure can be extremely advantageous to new designers as it will lead to new opportunities for building upon precedent of success. In the end, architects will inevitably have to convince paying clients that the benefits of doing something novel outweigh the security of doing something with built precedent.

A marked disadvantage of corporate initiatives in IA has to do with their lack of specificity at the individual level. As such projects are designed at a much larger, urban scale, they often employ interactions or general interactivity based on very general or nonspecific data and focus on making the collective group more aware that people are affecting these environments rather than interacting with people directly. The advantages of corporate initiatives, however, far outweigh the disadvantages, and lie in innovative exposure associated with corporate branding. Branding in the classic sense is about creating unique identities for products and services, and aim to distinguish their offerings from competitors. Corporate branding employs the same methodology. While corporate branding is a complex undertaking that entails many activities, the role that architecture plays in branding is often overlooked. Recently, a number of corporations have employed interactive strategies for building and maintaining strong perceptions in the minds of customers. When the architecture itself becomes communicative and when it has an identity associated with a corporation then it can facilitate a whole new level of accessibility and personal attachment to a particular brand.

>**Fig. 05:** LAb[au]: laboratory for architecture and urbanism, Philippe Samyn & Partners, M & J.M. Jaspers, J. Eyers & Partners, Barbara Hediger, *Touch, interactive urban installation.*

Every year, IA becomes increasingly feasible from an economic standpoint. Recently, a number of different factors and demands have drastically accelerated the feasibility of prototyping, as well as full-scale implementation.

Economic Feasibility

Every year, IA becomes increasingly feasible from an economic standpoint. Recently, a number of different factors and demands have drastically accelerated the feasibility of prototyping, as well as full-scale implementation. Much of this feasibility stems from different processes, technologies, and mindsets that have been expanded upon in the previous three sections—all of which contribute to the real possibility of actually building more interactive projects. Other interactive fields paralleling architecture, such as home automation, have also greatly contributed by raising the demand for technology used in IA projects. This increased demand for the hardware and technology has aided in the actual hardware and software used to become cheaper, more powerful, and more available.

In the past, architects and designers who wanted to experiment with IA were greatly limited in the possibilities for testing because the hardware, software, and manufacturing logistics were cost-prohibitive. This meant that the amount of testing and experimentation was very limited and that most tests needed to take place inside of software through simulations rather than in the physical world. Many great resources currently exist for students and practitioners to quickly gain the insight necessary to begin building simple, cheap prototypes. For example, Tom Igoe and Dan Sullivan wrote a fantastic book called *Physical Computing* that is a valuable resource for the uninitiated to build interactive systems.[10] Other great resources include “Low Tech Sensors and Actuators” by Usman Haque[11] and resource pages on a number of interactive architecture blogs such as Ruairi Glynn’s Interactivearchitecture.org.[12] All of these resources demonstrate accessible means of using existing technologies and products, and strategies for reusing them in interactive prototypes.