Hybrid Landscapes of India: Communicators Between the Worlds

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Abstract: This paper looks at the emergence of hybrid landscapes internationally and more specifically their emergence in India in the context of a changing world where digital technologies permeate many aspects of the human environment. It then looks at their ability to reconnect emerging landscapes with their pre-existing natural and social context as well as anchor people in the landscape and reconnect with the special qualities of the place.

The paper argues that landscape architecture can create this sense of place by combining traditional and present-day materials with digital technology based on the example of a landscape project under construction in Hyderabad, India. We explore how the transformative forces of digital technology can be used in addition to the analogue materials and tools of landscape architecture to convey the story of a new landscape. This makes landscapes important communicators in a fast-changing world.

Digital design tools in combination with traditional tools have to date been used widely in landscape architecture and the creative field. They have a drastic influence on the design process and the new forms available. TeamLabs has created interactive designs for the Kadokawa Culture Museum, in Musashino Woods Park, Saitama, Japan that communicate between nature and user (PACE 2022).

The paper shows that hybrid landscapes can utilise tools to translate natural systems and create seamlessly integrated environments, from data-driven light installations, responsive sculptures, and performative materials, to smart highways, dynamic spaces, kinetic facades, and adaptive buildings (FOX 2016) to bridge the gap between a fast-changing physical world and a slowly disappearing site context or natural environment.

Hybrid landscapes with the capacity to perceive, react to, and connect with humans and the natural world (FOX 2016) and man-made physical and social world, aim to 'future-proof' them for an ever-changing world of new environmental, social and economic requirements and challenges.

As the project is not yet constructed, it will only be possible to measure whether the project achieves creating a sense of place through its hybrid design sometime after completion. This should be done through surveys of the users, data collection, observations and comparisons to other projects.

Keywords: Tradition and modernity, performative design, kinetic facade, adaptability, sense of place

1 Introduction

The world we live in is in a constant state of change. This change is felt both in the physical world but also the social fabric and economic development. (Digital) technology in the form of social media, online games and lessons, multimedia and mobile devices change the human physical, social and economic environment (BRITANNICA 2022). This makes it necessary for existing and new landscapes to bridge these gaps. Through the transformative forces of digital technology in addition to the analogue materials and tools of landscape architecture these hybrid landscapes are well equipped to address both material and non-material changes and challenges.

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Question 1: How can a hybrid landscape architecture strive to create meaningful places for people by means of traditional and present-day material together with digital technology?

Question 2: Will hybrid landscapes with their ability to react and communicate between the people and the natural and man-made physical and social world, 'future-proof' them for an ever-changing world of new environmental, social and economic requirements and challenges?

We were able to look at many examples of implemented projects that utilise hybrid designs for the buildings and landscapes internationally with active facades that react to exterior conditions for both energy savings and maintaining human comfort (FORTMEYER 2014), such as the Bund Finance Centre, Shanghai, China, UK Pavilion at expo 2010, Shanghai, China, the Eden Project, Cornwall, Great Britain, METI School, Rudrapur, Bangladesh and Hazza Bin Zayed Stadium, Abu Dhabi, UAE. In India, there are a few examples that predominantly use hybrid design with a focus on its performative aspects to reduce their energy consumption and impact on the environment. These are Punjab Kesari Headquarters, Delhi NCR, India and the British School, Delhi, India.

The paper argues that landscape architecture can create a sense of place by combining traditional and present-day materials with digital technology, and presents the example of a landscape project under construction in Hyderabad, India. We explore how the transformative forces of digital technology can be used in addition to the analogue materials and tools of landscape architecture to convey the story of a new landscape and create meaningful places that interact with the people, their needs and the natural and man-made world, rooted in their spatial, cultural and professional context. This makes landscapes important communicators in a fast changing world.

2 Case Studies

2.1 Charminar, Hyderabad, India – The Use of Analogue Design Tools

What gives Charminar its identity? Is it the 4 minarets or the concept of space making or is it the amalgamation of both?

By using Charminar as a reference point, the landscape design explores the usage of the four traditional elements of nature – fire, earth, air and water – to form a better space throughout history and how this can be reflected and understood in terms of the usage of material and craftsmanship in this context. We show how to evolve and animate a space that is contextually apt and cannot be recreated in any other place other than in Hyderabad creating a long-lasting landmark that is routed in tradition and culture.

The Charminar was constructed at the intersection of the historical trade route that connects the city to international markets through the port city of Machilipatnam (GAYER 2011). The Old City of Hyderabad was designed with Charminar as its centerpiece. (BRITANNICA 2011). The city was spread around the Charminar in four different quadrants and chambers, segregated according to the established settlements.

Now regarded as one of the supreme architectural achievements of the Quṭb Shāhī period, the Charminar is a grand architectural composition in Indo-Saracenic style. It is built of granite and lime mortar with stucco ornamentation (BRITANNICA 2022). The Charminar is a square structure measuring about 20 metres each side. Each of the sides has a large arch that opens directly onto the street in front of it. At each corner stands an intricately shaped, 56 meter-high minaret with a double balcony.

2.2 Resonating Life in the Acorn Forest – Using Digital Design Tools

TeamLab is an art collective and interdisciplinary group of specialists from various fields such as artists, programmers, engineers, CG animators, mathematicians as well as architects that explore and experiment the intersection of art, science, technology and the natural world (PACE 2022). Through their work teamLab investigates the relationship between the self and the world and seek to trigger new perceptions. They may heal the man-made separations of the world that people have created to help them understand the world around them and help contextualize the world that functions as a continuum.

Interestingly the scientist Dr. Anne Katharina Zschoke comes to the conclusion that instead of dividing the world into manageable portions, interrupting its dynamic processes in an unintentionally painful way we need to acknowledge that the symbiosis and circular processes are vital to all life and this implies that we need to promote their healthy flow, instead of treating all its facets as individual areas (ZSCHOKE 2017).

This thinking is also reflected in the Resonating Life Acorn Forest, Kadokawa Culture Museum, Musashino Woods Park, Saitama, Japan. The artwork transforms the vegetation into art by using "non-material digital technology" that is inserted into nature without disturbing it (TEAMLAB 2022). At daylight, ovoids reflect the world around them and may topple over when pushed over by the wind or people. They then rise again releasing a soft tone that is resonated by other ovoids one after another at night they shine in "Autonomous Resonating Life – Liquidified Light Colour" (TEAMLAB 2022) during the night. The acorn trees that form the forest resonate this play of colour and tone… the visitor becomes an elemental part of the landscape

2.3 Image Tower Hyderabad – Using Both Analogue and Digital Design Tools

Not enough publications look at architecture or landscape projects from the Indian subcontinent and even fewer from an angle of integrating both analogue and digital technologies. This case study aims to close that gap.

The project itself takes reference to how traditional tools were used by designers to evolve unique spaces rooted in their spatial, cultural and professional context that interact with the people and the world. By learning from the successful historic build-projects, the Charminar, as well as the experimental contemporary project Acorn Forest, Kadokawa Culture Museum, Musashino Woods Park, Saitama, Japan by teamLab the paper describes how these methods were applied onto the build-project IMAGE Tower. The paper does not look in detail into other design tools and design drivers but these are described briefly for reference below.

The project vision provided by the Government that seeks to develop a state-of-the-arts Information Technology Campus of National and International importance provides a unique

opportunity and is resonated in the landscape design through the integration of digital landscape aspects into the traditional analogue landscape. Initially, this happens through traditional methods of visual representation such as hand sketches and various graphic forms as part of the research, design and presentation process and then progresses to the use of digital methods of virtual reality walk- and fly-throughs. Subsequently, the physical landscape is transformed into an interactive immersive environment of a holistic experience of the nature existent beyond the site boundaries by insertion of "non-material digital technology" (TEAMLAB 2021). The foundation of an adaptable hybrid landscape is laid down.

Fig. 1: Visualization showing the layers of Landscape area at various levels of the site plan

2.3.1 Evolution of the Landscape Design Approach

The landscape design approach evolves from the following drivers:

A) Project Vision
B) Site Topography
C) Architecture Design Intent
D) User Experience / Functional Aspects of the Vision

2.3.2 Project Vision

The IMAGE Tower project is a build-project developed as a self-sustaining information technology campus scheduled for completion in 2023 and was initiated by the Government of Telangana, India to strengthen the position of Hyderabad as a centre of the animation, visual effect, gaming and comics industry of international importance. This includes the realisation of a physical and virtual infrastructure to minimize any obstacles to the IT sector.

2.3.3 Site Topography

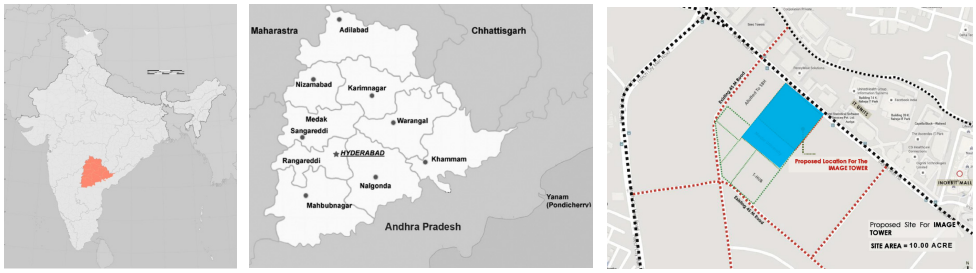

Fig. 2: Map indicating the site and its context Visualization showing the layers of Landscape area at various levels of the site plan

The 10 acres site has a unique landscape topography and typology with mounds of very large boulders up to several meters in diameter and dotted with green that are a part of the larger hilly landscape. The Musi River flows nearby, many larger to smaller lakes provide drinking water to the city with Osman Sagar, Himayat Sagar and Hussain Sagar being the largest ones and Durgam Cheruvu the closest to the site. As any Indian city its oldest architecture dates back almost a thousand years in the form of temple architecture. Much of the historic building architecture is of the two Indo-Islamic styles of the 16th to 18th century, including the intricately decorated Charminar, a monument and mosque of the Qutb Shahi architecture style that has been a landmark since its inception.

2.3.4 Architecture Design Intent

IMAGE Tower stands for Innovation in Multimedia, Animation, Gaming and Entertainment and gives the name and context to the project, envisaged as a landmark for the new 'Hitech-City' of Hyderabad. The building draws its inspiration from the Charminar (Four Towers) aiming to evolve a space that is contextually apt. The monolithic building emerges from the pure geometric form of the cube, with four 'pillars' connected to one another to form gateways in reference to the legacy of the four minarets of Charminar.

The development has 20 storeys that provides commercial spaces for an AVGC infrastructure, co-working spaces, data management labs, audio video editing labs, dubbing theatres, studios, suites, meeting rooms and other supporting and common amenities for the users and public. The vision of Hyderabad together with the unique landscape and urban setting have become key drivers to build-upon when evolving the landscape design.

2.3.5 Emerging Landscape Design Approach

The birth of the landscape design seems easy:

1. The dominance of the cubic build-form is acknowledged.
2. A square-grid in response to the build-form is laid onto the landscape.
3. The existing site topography with the two mounds of beautifully rounded boulders and the local landscape character with the Musi river and thick vegetation is translated into the landscape designs.
4. Landscape segments are formed.
5. Build structures are inserted for added functionality.
6. Finally, the non-material digital technology is incorporated.

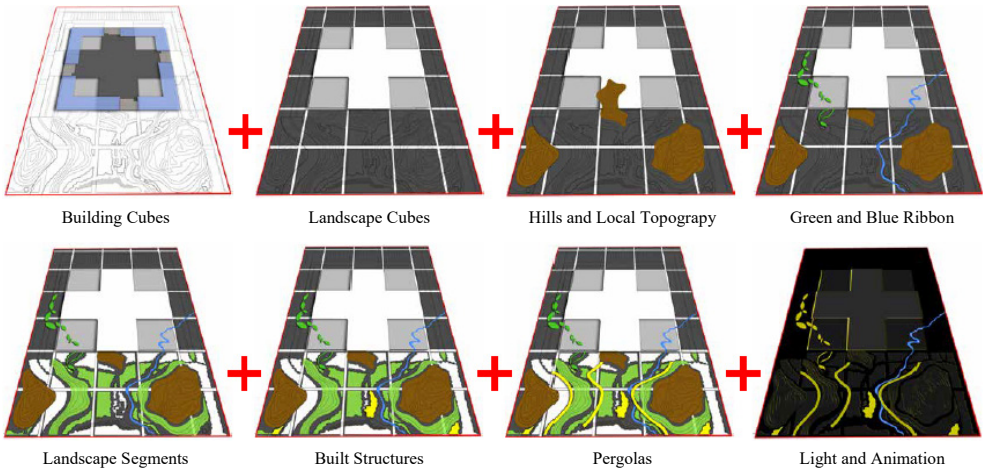

Fig. 3: Pictograms explaining the evolution of the site-specific landscape design approach

3 Design Elements

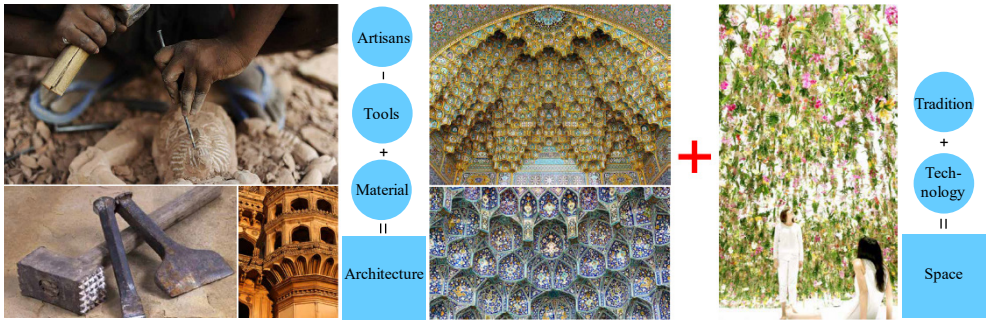

Fig. 4: Traditional (analogue) and contemporary (digital) tools

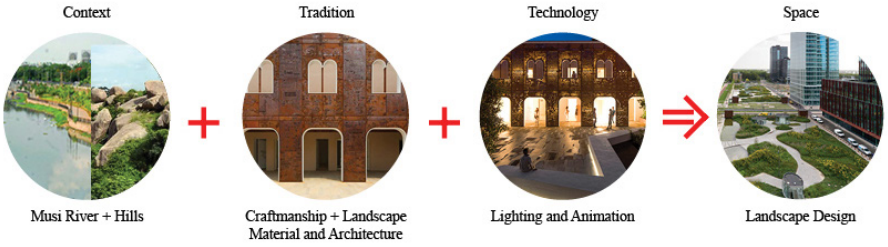

Fig. 5: Design Methodology

3.1 The Green and Blue Ribbon

The ‘Blue Ribbon’ as well as the ‘Green Ribbon’ that meander through a recreated seemingly natural landscape take their inspiration from the surrounding natural landscape features. They are animated through light and water creating ever changing effects and emotions on their

canvases of steel, stone, wood and tensile reacting to changes in the atmosphere and their immediate human influences.

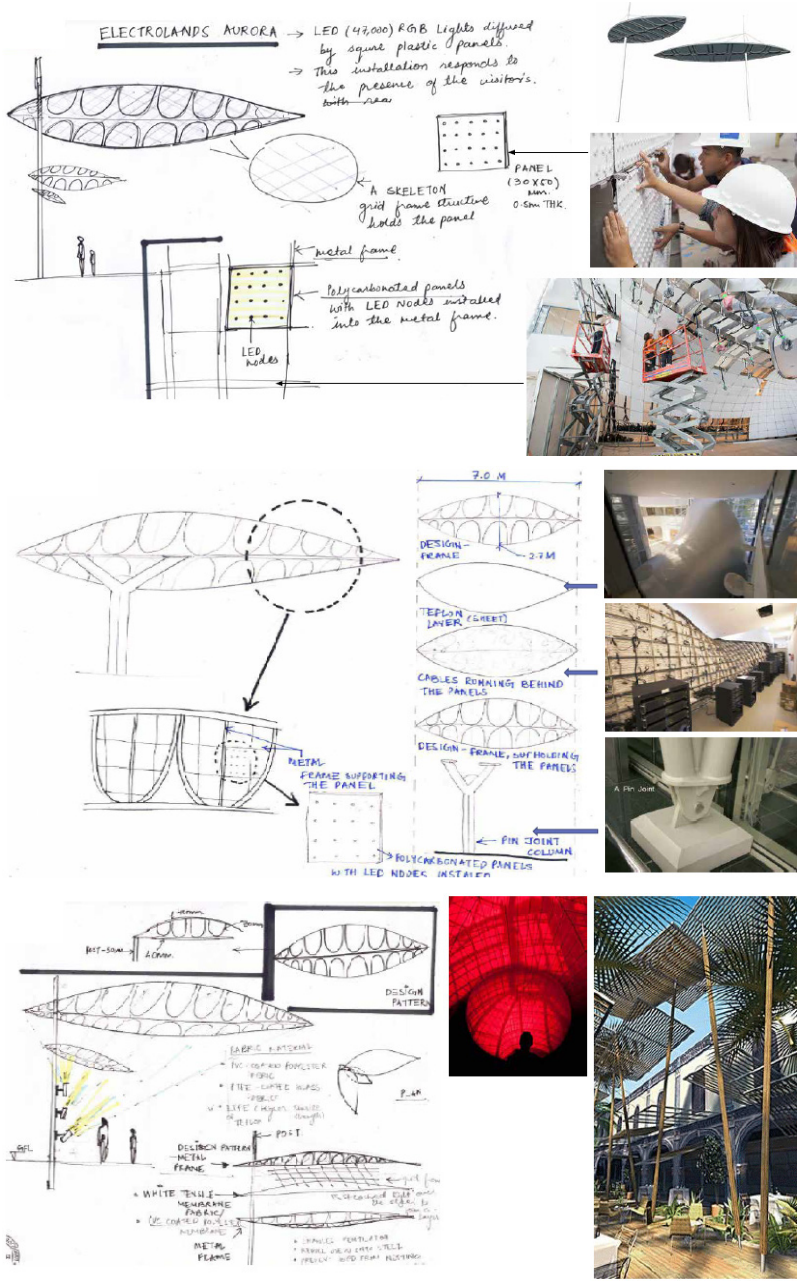

Fig. 6: Evolution of the pergola design

A green ribbon winds its way through the 3-dimensional space of the exterior as a sequence of pergolas, planters, and vertical green and interactive vertical elements. Together they rep-

resent the surrounding natural vegetation that emerges in the crevices of the hills nearby. The journey starts with a curved steel pergola one part covered in thick vegetation and the other with colored glass panels that each cast their shade and color hues on the floor. It then climbs up two floors on the façade as a backlight laser-cut rusted steel panel. Having arrived at the second floor, the oversized leaf shaped pergolas are covered with tensile membranes and projectors installed underneath them that are activated by motion sensors and control unit to catch human activity in its vicinity and translate into light animations.

Fig. 7: Sequence of the Water Features that Form the blue ribbon

A blue ribbon finds its way as a sequence of pools of shallow water, interactive water reactive concrete, vertical water features and a long-animated water feature with bubblers and jets as well as calm water. Light projections create an enlarged animated water play area at night. It represents the Musi river of Hyderabad as well as the many seasonal water rivulets. The blue ribbon emerges at the second floor as a linear water feature at floor level and water reactive concrete surrounding it, inviting visitors to wet their feet and walk barefoot or splash water revealing the hidden messages in the concrete. This is quite simply done through the concrete flooring having a water-proofing sealant on its surface or not. The water then gently flows down the façade in a sheet flow over a sequence of textured precision-cut, pre-fabricated granite cladding to form a vertical water wall. Inlets, throughs and outlets as well as water quantities needed are carefully planned and laid out along the 12m vertical water feature. After reaching the ground floor level the long linear water feature is at first very narrow and shallow because of the fire tender movement spaces. Gradually it gets wider and deeper with a larger degree of animation and water volume with very differently textured surfaces inviting users to wet their feet and wade through. The water quality is strictly controlled to allow for human contact, integrated bubblers switch on when people come near the water feature. Above it all are installed light projectors that cast sequences of looped blue in-motion waves on the surrounding areas making the water feature appear much larger. These patterns can be adapted from time to time. Finally, the physical and virtual water rivulet disappears between large boulders that symbolize rocks.

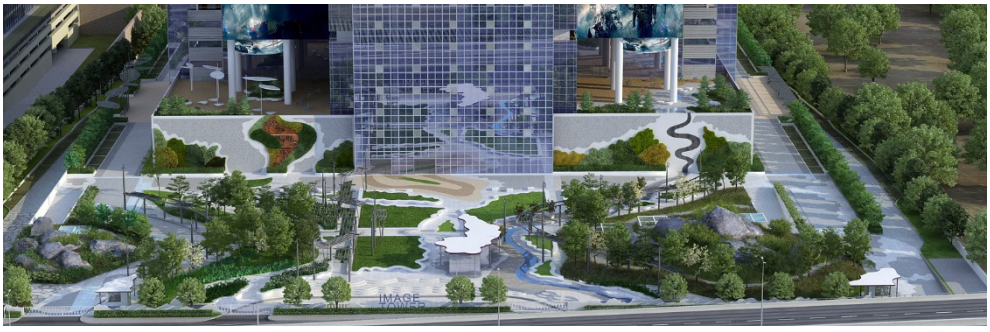

Fig. 8: View of the frontage landscape, green ribbon (left) and blue ribbon (right)

3.2 The Kinetic Façade

While the initial purpose for developing the probabilistic and formal models described in the paper were to simply allow us to project with reasonable accuracy the future sub-regional patterns for landscape planning and design in the Marcellus region, we quickly recognized how valuable a broader application of probabilistic modelling in landscape design and planning projects could be. Moreover, we identified two key points of discussion.

The dynamic skin of the façade creates ‘skin-like articulation effect’ (SALTER 2011) is an experiment to achieve a prototype to explore an art-driven design theme for a service block. The purpose for the Kinetic façade in this project is to make it more effective in creating an energy than a mere static surface for aesthetic purpose. The workability is explored based

Fig. 9: Dynamic facade Eskenazi Hospital in Indianapolis

on the principle of wind turbine. The technical details are being reviewed by the expertise for the modulation and computation of this dynamic membrane.

Using these techniques adds value while creating a sustainable hybrid landscape.

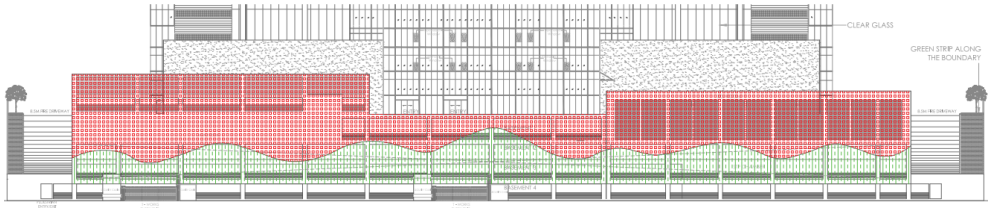

Fig. 10: Rear-side elevation of the service block; kinetic façade (red) & green screen (green)

Fig. 11: Visualization of architect's proposal

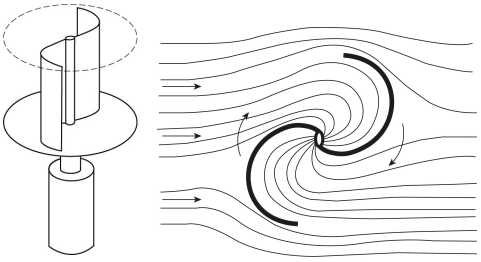

Fig. 12: Sketch of mechanism

4 Discussion

4.1 Can Landscape Architecture Create a Sense of Place by Means of Traditional and Present-day Material Together with Digital Technology?

The landscape design of the project uses the transformative forces of digital technology and material of the analogue world to evolve responsive spaces. It does this by incorporating digital technology, the projection of sound and light and the use of reactive materials, surfaces and designs into the landscape design to convey the story of a new landscape space that create meaningful and interactive spaces. This is layered onto the traditional analogue tools of landscape architecture such as planting, paving, furniture and seating and water elements.

By integrating analogue natural elements of the setting, such as the boulders, a strong reference to the physical setting is made. Digital tools that utilise light, sound, animation have the ability to add another angle that keeps changing, that is adaptable and therefore can pull people back to the place again and again, avoiding boredom and detachment between user and space.

The paper argues that landscape architecture can create this sense of place by combining traditional and present-day materials with digital technology on the example of a landscape project under construction in Hyderabad, India. We explore how the transformative forces of digital technology and material can be used in addition to the analogue tools of landscape architecture to convey the story of a new landscape space and create meaningful places that interact with the people and the natural and man-made world, rooted in their spatial, cultural and professional context. This makes landscapes important communicators in a fast changing world.

4.2 What can the Hybridization of the Analog and Digital World Offer Designers, Planners and People? What Hybrid Vigor can it Bring to a Project?

The landscape design utilizes a canon of design interventions to find answers to these questions, namely the Blue Ribbon (sequence of interconnected water features) and Green Ribbon (sequence of pergolas and screens) that are woven into the multiple spaces that extend horizontally and vertically across the site, and finally the visitor center and the kinetic façade of the large service yard both at the ground floor level.

The researched projects show that hybrid landscapes can utilise digital design tools to translate natural systems and create seamlessly integrated environments, from data-driven light installations, responsive sculptures, and performative materials, to smart highways, dynamic spaces, kinetic facades, and adaptive buildings (Fox 2016). They aim to bridge the gap between a fast changing physical world and a slowly disappearing site context or natural environment. These landscapes, with their capacity to perceive, react to, and connect with humans and the natural world (Fox 2016) and man-made physical and social world, try to ‘future-proof’ them for an ever-changing world of new environmental, social and economic requirements and challenges.

5 Conclusion and Outlook

In India however, few examples exist that predominantly utilise hybrid design tools with a focus on its performative aspects to reduce their energy consumption and impact on the environment. Some of these are Punjab Kesari Headquarters, Delhi NCR, India and the British School, Delhi, India. The project studies should provide an interesting practical project to look at in the future.

As the project is not yet constructed it will only be possible to measure whether the project achieves to create a sense of place through its hybrid design sometime after completion. The research was partially based on a not-yet build-project. Therefore, we were not able to confirm the hypothesis with certainty. However, literature review gives evidence that this should be achievable (FOX 2016). Therefore, we would need to conduct a field study, user surveys as well as empirical study. This would be an aesthetic evaluation and comparison. Hybrid design tool are also heavily used during all stages of a project to help the designer communicate complex and often unconventional design ideas through realistic stills and animated visualizations of the same. The planning, management and monitoring of construction packages can be made a lot easier when using digital design tools (FOX 2016).

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