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AMITY SCHOOL OF ARCHITECTURE AND PLANNING  
(AUMP, GWALIOR)

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## FROM THE DESK OF EDITOR IN CHIEF

It is indeed a pleasure to publish the 4th Issue of the ASAP Newsletter in the online format for the period of October to December 2018. This edition includes articles and news of events organized with outcome report at the Amity School of Architecture and Planning (AUMP) during the period.

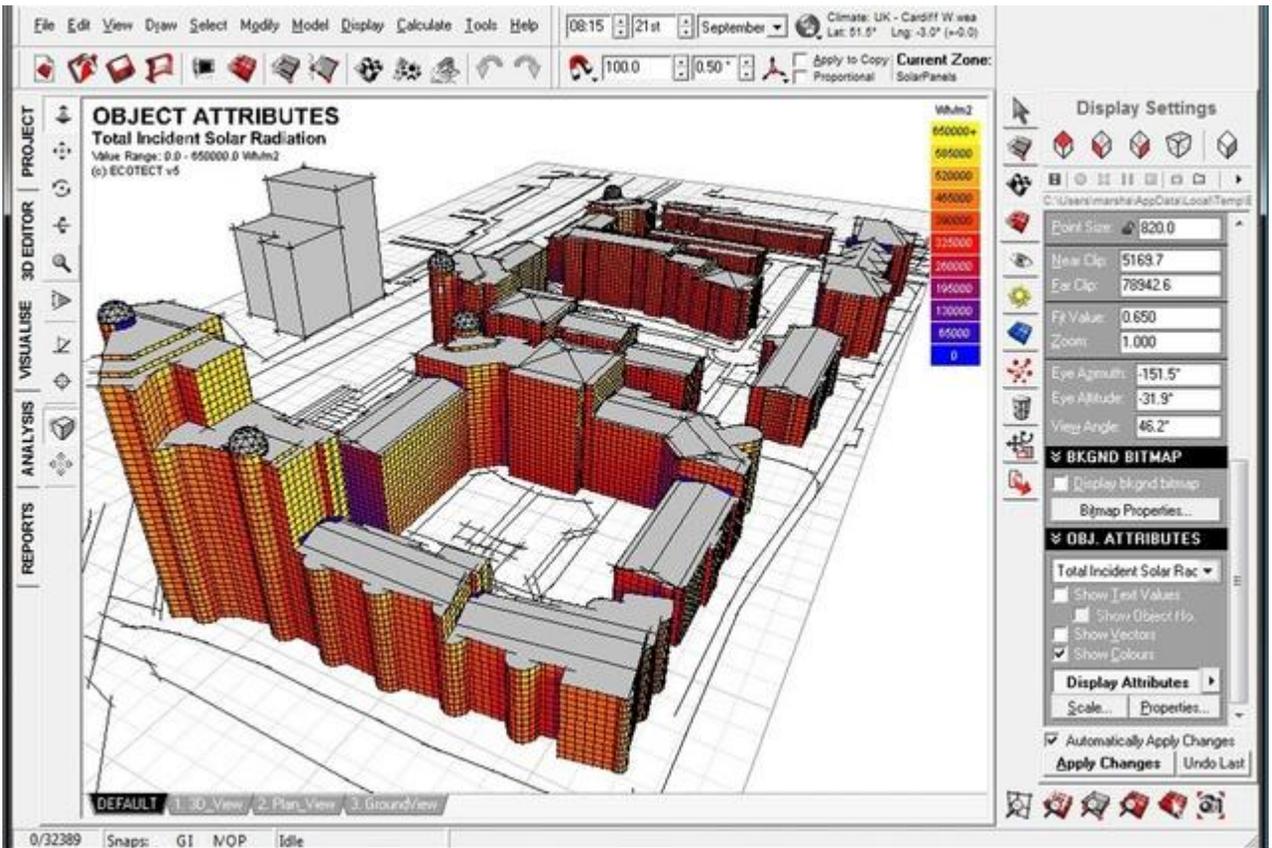
In this issue the article is upon building information modeling (BIM), It is used to design and document building and infrastructure designs. The other article talks about Parametric design approach which is a paradigm in design where the relationship between elements is used to manipulate and inform the design of complex geometries and structures.

This issue also talks about Integrating Craft Practice into Design and the exploration of world heritage structures at Bhimbetka.

Prof. Y.P.SINGH  
(Director)



# SUSTAINABLE DESIGN ANALYSIS AND BIM



A screen shot from Autodesk Ecotect Analysis.

## Analyzing a building design

BIM enables architects and engineers to understand how their projects perform before they are built. Developing and evaluating multiple alternatives at the same time allows easy comparison and informs better sustainable design decisions.

“Almost at the click of a button, we are now able to alter designs, flipping back and forth through options to ensure that the final designs we produce are the best ones for each project,” says Tristram.

A computable Autodesk Revit Architecture design model is devised for sustainability analyses – even during early conceptual design. As soon as the layout of a building’s walls, windows, roofs, floors and interior partitions (elements that define a building’s thermal zones) are established, the information employed to create a Revit model can be used to perform analyses. Performing these analyses in a CAD workflow is fairly difficult, as the CAD model has to be exported and carefully massaged to work with analysis programs. Using Ecotect Analysis to analyze early building designs emerging from a Revit-based BIM process can simplify the analysis process.

## Whole-building energy, water and carbon analysis

Subscribers to Ecotect Analysis can also get access to Autodesk’s Green Building Studio web-based service for the duration of their subscription. The web service enables faster, more accurate whole

building energy, water and carbon emission analyses and helps architects – the majority of whom are not specially trained in any of these analyses – to evaluate the carbon footprint of a Revit-based building design with greater ease.

The Green Building Studio web service was first introduced in 2004. Today, its analysis results meet American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 140 and are qualified by the U.S. Department of Energy (DOE). The service received the Microsoft Ingenuity Point Award in 2008.

Built specifically for architects and using green building extensible markup language (gbXML) for easy data exchange across the internet, the web-based service was one of the first engineering analysis tools to deliver easy-to-use interoperability between building designs and sophisticated energy analysis software programs such as DOE-2.

The link between the Revit platform and the Green Building Studio web service is facilitated through a plug-in that enables registered users to access the service directly from their Revit Architecture design environment. This streamlines the entire analysis process and gives architects faster feedback on design alternatives, making green design more efficient and cost effective.

Based on the building's size, type and location (which drives electricity and water usage costs), the web-based service determines the appropriate material, construction, system and equipment defaults by using regional building standards and codes to make intelligent assumptions. Architects can change any of these settings to define specific aspects of their design: a different building orientation, a lower U-value window glazing or a four-pipe fan coil HVAC system.

The service uses precise hourly weather data as well as historical rain data, accurate to within nine miles of the given building site. It also uses emission data for electric power plants across the United States and includes the broad range of variables needed to assess carbon neutrality.

### **Analysis results**

Usually within minutes, the service calculates a building's carbon emissions and the user can view the output in a web browser, including the estimated energy and cost summaries as well as the building's carbon neutral potential. Users can then explore design alternatives by updating the settings used by the service and re-running the analysis, or by revising the building model itself in the Revit-based application and then re-running the analysis.

The output also summarizes water usage and costs and electricity and fuel costs, calculates an Energy Star score, estimates photovoltaic and wind energy potential, calculates points toward LEED daylighting

credit, and estimates natural ventilation potential. The Green Building Studio report is easy to understand, giving architects information they need to help make greener design decisions.

The desktop tools in Ecotect Analysis provide a wide range of functions and simulations, demonstrating how environmental factors will affect building operation and performance in the early design phase.

## Summary

The consistent, computable data from Autodesk Revit Architecture and the breadth of performance analysis of Autodesk Ecotect Analysis work in combination to reduce the cost and time of energy modelling and analysis. Feedback from these analyses helps architects and other users to optimize the energy efficiency of their designs and work toward carbon neutrality earlier in the design process – a key ingredient not only for incorporating energy efficiency into standard building design practices, but also for mitigating the carbon footprint of our built environment.

## HERITAGE AT A GLANCE: PRE HISTORIC SITE

<p><b>PAINTED ROCK SHELTERS OF BHIMBETKA</b></p>	<p><b>LOCATION &amp; SITE</b></p> <p>Bhimbetka is one of the most ancient &amp; a rare prehistoric site. Archaeological evidences at Bhimbetka show continuous sequences of culture from Palaeolithic to the historical periods.</p> <p>The rock shelters of Bhimbetka, a World Heritage site is located about 45 km south-west of Bhopal, the capital of Madhya Pradesh. It lies on the northern end of Vindhya Ghats.</p> <p><b>DISCOVERY</b></p> <p>Indian archeologist Late Dr. V.S. Wakankar travelled to Bhopal by train and he saw some rock formations. Later he visited the area along with a team of archaeologists and discovered several pre-historic rock shelters in 1957. There are around 700 rock shelters in the region but it is limited to 15 rock shelters for the visitors.</p>	<p>Rock shelter no. 1</p> <p>The first rock shelter housing 4 meters deep cultural deposit with the evidence of human occupation and on the upper ceiling has few paintings of historic period.</p> <p>Rock shelter no. 1</p> <p>Rock shelter No.3 This cave was named as "Auditorium" by Dr. V.S. Wakankar. It comprises human and animal figures, linear designs and hand prints.</p> <p>Rock shelter no. 4</p> <p>The shelter is popularly known as "200" rock art. It contains 252 animals and with 16 different species.</p> <p>Rock shelter no. 4</p> <p>View Point There is a rock mass which looks like a tortoise. The uncommon shaped rock formation is due to wind erosion.</p> <p>mass in the shape of tortoise</p> <p>SIDDHARTH.S.JADON ASSO. PROFESSOR, ASAP</p>
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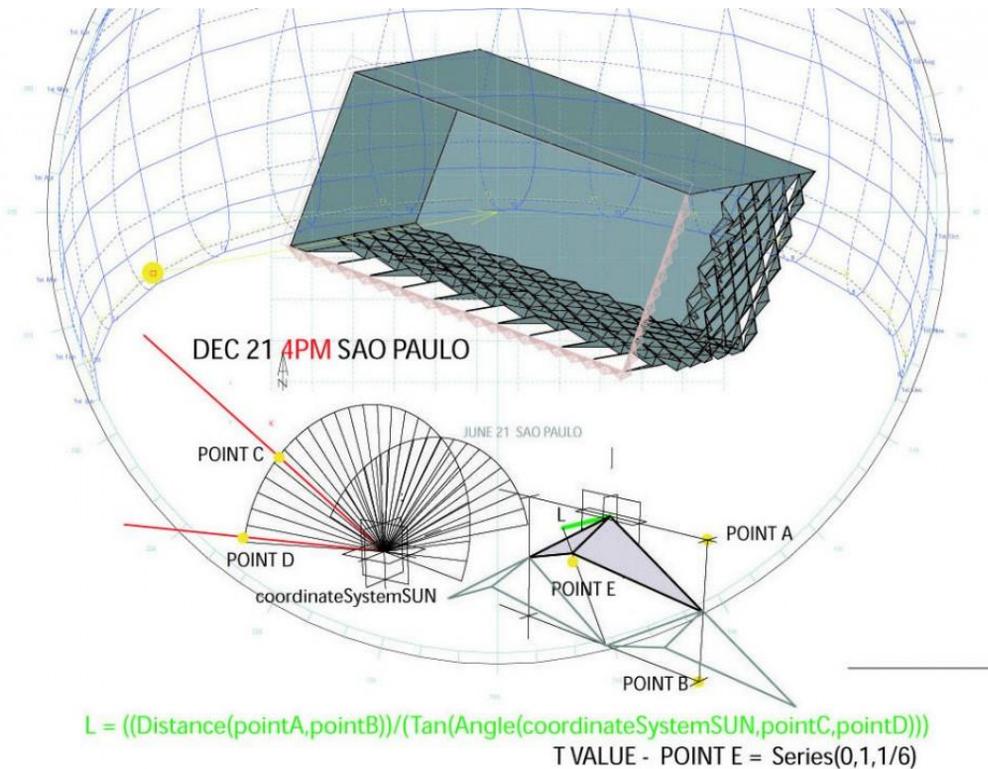
## Will parametric design take architecture to a new paradigm?

I pondered this question for a long time, trying to figure out how I can answer this question. Can we predict the direction that architecture is heading towards? Can we predict the shape that the architecture profession will reform to be?

"Parametric design isn't about sexy shapes", Ahmed Borham said (Architect and Urban researcher). He continued, "A thing that Gaudi used and most of recent users ignore are the structural forces". Here Borham is saying that the forms produced by any parametric software should be a result of a number of forces. In other words he thought "Trying to think about the proper way of using parametric design in shaping our buildings is to design the rules, or to define parameters, that will effect on a building's geometry. Geometry of the building and sketching it, then modeling it, is not a parametric way of design. It's a computerized design. We need to know the difference between computing and computerizing" Borham said.

To realize the difference between computing and computerizing, I'll present to you an example: "Imagine drawing a window in a wall using AutoCAD, you draw a rectangle with certain dimensions and that's it, if you created a thousand instances of that window on different rooms then decided to change it, you will have to do it all over again. That, is explicit modeling. Using associative or parametric modeling you can define relationships between the parameters. So for example, you can say for each room the window should be 20% of the room's area. Or even better, you can say the amount of natural light infiltration you require inside each room and it automatically calculate the window size and position for each room of the thousand. That is the very basic idea..." Sherif Tarabishy said (Co-founder of morphd).

Not only structural forces can shape our buildings. One of the most parameters that are most commonly taken into consideration is environmental parameters. Environmental design became the most worldwide trend ever and sustainability parameters controls most of our design. Even if unconsciously. Therefore we found this field is one of the first fields that parametric design has dealt with. You can give all calculations and rules to your software and design freely with all other parameters without caring for the environmental impact of your buildings. One other important parameter that affects our designs is acoustics. We can use parametric design to help us with designing building geometry to achieve the best acoustic environment inside spaces, by controlling opening, materials and shapes of surfaces.



Ref : Analyzing environmental parameters (Photo courtesy of SUBdV Architecture)

Architecture doesn't deal with form only through environmental and structural equations. By now you must have asked yourself about the artistic approach to building design in parametric procedures. The answer of this question depends on your definition of aesthetics. If you really believe that aesthetics can be expressed by mathematical expressions, so it's easy to parameterize them. If you believe that they are intangible parameters, parametric design won't help with that.

inally, we are trying to explore the relationship between architectural design parameters and how parametric design deals with to figure out how will parametric design affect architecture. Now it's clear that parametric design isn't a novel approach to design. On the contrary, architects who believe the unintentionally in design used it a long time ago. Parametric design affected architects who used it in their way of thinking and practice. But if we're talking about the revolution of parametric software nowadays, we could conclude that now we are enabled to consider more parameters. Accordingly, the quality of the parametric design process will increase more and more. Moreover, the final product can be more affordable by including manufacturing parameters to our design process.

# Integrating Craft Practice into Design Research

Over the last two decades, craft practice has played a considerable role in practice-led design research, especially as the subject and the vehicle for theoretical inquiry. Exploring the expressivity of materials is used to demonstrate how craft can drive a practice-led research process and how research can enhance craft practice. Positioning craft practice in a research context can facilitate the reflection and articulation of knowledge generated from within the practitioner's artistic experience, so that the knowledge becomes explicit as a written text or as a means of visual representation. Research can not only transform ways of designing or making artifacts, but also theoretically inform practice so that the practice can develop the practitioner's aesthetic intelligence, the results of which are craft objects that can be understood more easily by viewers.

In material-designated disciplines, craft is understood not only as a way of making things by hand, but also as a way of thinking through the hand manipulating a material (Nimkulrat, 2010, p. 64). Craft is thus "a means for logically thinking through senses" (Nimkulrat, 2010, p. 75) This understanding follows the notion of craft as "a way of thinking through practices of all kinds" (Adamson, 2007, p. 7) and "a dynamic process of learning and understanding through material experience" (Gray & Burnett, 2009, p. 51). Hence, the process of making material objects by hand can be identified as one way of thinking intellectually (Sennett, 2008, pp. 149-153).

Keywords – Material, Practice-Led Design Research, Reflection.

Relevance to Design Practice – how craft as a way of thinking through material can be positioned in a design research context and facilitate the reflection and articulation of knowledge generated from within the researcher-practitioner's creative practice.

## **Sculpture and Clay Modeling Workshop – ASAP, 01-10-2018**

On 1st Oct, 2018, the Amity School of Architecture and Planning had conducted "Sculpture and Clay Modeling Workshop" where the 1st and 2nd year batches of B. Architecture and B.I.D had actively contributed to this workshop to bring out the best potentiality of the Department. From Amity School of Architecture and Planning, 24 students participated all together and performed with flying colors. The event was commenced under the guidance of Prof. Y. P. Singh by the organizing team of Ar. Ashish Sharma, Ar. Monika Shekhar Gupta, Ar. Sudheer Sikarwar and Ar. Siddharth Jadon.

This workshop was intended to appreciate clay and all its beauty, bounty and abundance; its strength and structural ability; its flexibility to bend and not break; its multi-functionality and usefulness; and its sustainability. It was to bring out the best of Clay structures which can be utilized for beautification of the campus and we as individuals create more self-reliant, energy efficient and sustainable environment. This event also aimed to create a "learning beyond the classroom" and gain practical knowledge about the essentialities of Clay and Plaster of Paris.

This practical hands-on workshop has covered the practical aspects of building with clay. It covers all the important basics we need to know including molding, preparation and detailing. The aim of the workshop has been fulfilled to its best by educating students about the potential of clay as an alternative material for various products, furniture and architecture.

The department had a joint venture of collaboration of all the batches working together, acting as "helping hands" and "learning beyond the classrooms" which boosted confidence in the students to work into any environment and inculcating eye opening experience. The program has harvested a seed of hope to deal with ground realities in execution, management and spontaneous decision making for making the project successful.



