



Modern Infrastructure in Indian Classrooms: A study of the Techno- Regime of Materiality and Immateriality

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Abstract/ Introduction

What is a material object? Can a material surface be considered as a site of projection and meaning making in an academic set up? What is the sensorial experience of that material surface for a student? Is that experience always dependent on the touch? How do we distinguish between material and immaterial?

In this paper, I have discussed the physical networks and infrastructures of material objects in academia and how they project meanings and power to the social structures around them. This paper is a study on the new techno regime and Architectural Designs of the Urban Classroom spaces in Delhi and their role in facilitating the teaching-learning process in academia.

The pedagogical space in India has evolved with time as Science and technology have vastly transformed the modes of transmission of knowledge in the Indian classroom. This material transformation is mediated over the years through design, and absence and presence of objects. Today, in an urban Indian classroom infrastructure, everyday objects like furniture, white board, projector, and human bodies make meaning for the education site. Each object indicates a technique, a social life, and associated relevance. The memory, the value, the symbolism of each one of these objects has certain existence in time and space. The meanings of these commodities however, do not rely on their human interactions and interpretations alone; but also in their form, circulation and context.

In the light of the current technology driven educational spaces in India, this research paper reflects on the idea of disciplinary societies and different types of machines matching different social forms, and how they are relevant to the larger study on socio-technological systems in academia. The study reflects on the relationship between classroom infrastructure and the play of economics in Government and Private universities in India. It explores the dynamics of design, flexibility and adaptability of the technological devices in academic settings and how the new technology facilitates collaborative learning, reciprocal teaching and co-creation of content in the Socio-technical cultural paradigm of education.

Based on the concept of the mechanisms of ‘modern societies of control’, the theoretical positioning of the study is carried out in the context of Deleuze’s insight of technological evolution and reflections on the object oriented ontology. The debates in the paper revolve around the politics of technology, materiality, social life of commodities and their intersection with the human interactions and interpretations in the college systems.

Keywords

Technology, Infrastructure, Materiality, Academia, Socio-technological systems

Research Objectives and Methodology

This research paper aims to study the following objectives-

- To conceptualise the material world and what it constitutes in academic spaces
- To study the role of physical networks in facilitating the teaching-learning process
- To explore the material transformation of the classroom over the years
- To understand the Deleuze’s insight of technological evolution and reflections on the object oriented ontology in a classroom setting

In this practice based research study that involves my participation as a teacher- researcher, I have worked with 5 collaborative work groups of 7 students each. Students from private colleges of Delhi, aged between 18-25 years brought photographs, videos, self made sketches, memes, cartoons and short stories related to technology, to the workshop, presented them to their peers and engaged in

discussions around them. These focus group discussions and repository revolved around technology, knowledge and power apparatuses around technology, various aspects and ways of surveillance, fears and anxiety related to technology, freedom and empowerment technology brings, screen syndrome, students' self reflections on various devices they use and the way all of these shape their notions of material and digital. My findings are based on the material generated in these workgroups, discussions and readings around them. Qualitative analysis based on Grounded theory and visual discourse analysis techniques are used for the study. Inductive, comparative, iterative and interactive approach is taken for the analysis.

Technology driven Academic Spaces: Material Vs Immaterial

It is important to engage with the contemporary technological devices like mobile phones and digital gadgets in academia through the understanding of their functions and the interpretations of their possibilities. There has always existed a deep relationship between pedagogy and learning space in India. India's own historical accounts relate the existence of '*gurukuls*', the learning spaces in the open lap of nature, establishing an intense bond between the teacher (the '*guru*') and the students ('*shishyas*'), and more so with their surroundings, that led learning to be organically driven from the connection with the nature and universe itself. Centuries later, the pedagogical space in India has evolved to reflect more of the Western idea of classroom space.

In Greek myth of Narcissus, Canadian scholar Marshall McLuhan calls technology as the self amputation of one's own organs¹. With ever increasing prosthetics, interference and transformations of human bodies are constantly in flux. How then we define what technology is and what is not? Is it possible at all to distinguish between the human and non human agencies?

With technology embedded in everyday life, it becomes important to engage with the design of learning environment in urban spaces and their relation with socio-cultural settings in which they operate. Contextualising the meanings of space, place and environment in academia, one may study the material politics around technology and the entangled constellation of space, place and matter along with human agencies from Foucauldian and Deleuzian perspective.

¹ McLuhan, Marshall. (1994). "The Gadget Lover: Narcissus as Narcosis" chapter from his book *Understanding Media: The Extensions of Man* Cambridge, Massachusetts, London, England: MIT Press, 1994, 41-47

When I study the semiotics (signs and symbols) of space and time in an urban classroom, it is quite evident that the assemblage of material objects and the infrastructure generate semiotic conditions of market potential. These Post Modernist architectural setups are redefining the knowledge systems and educational practices, as also detailed by Lyotard². Technology and infrastructure that reflects on the philosophy of education, founded on the discourse of modernity. From this perspective, I question whether the ideas of critical reasoning, individual freedom, progress and benevolent change are realised or compromised. It is very prudent to note how these material objects prompt power hierarchies between student and teacher and how this corporatisation reshapes relations within higher education at local, national, regional and international levels. This also brings back the questions of capitalism working as inhuman, abstract and anti polity movement explained by Nick Land in Mad Black Deleuzianism³.

On Teachers' Day; September 5, 2019; one of the students participating in the workshop shared this poem about Rip Van Winkle from German Folktale-

"Rip Van Winkle awakens in the 21st century

After a 100 years snooze.

Of course, utterly bewildered by what he sees men and women dash about.

Talking to small metal devices pinned in their years

Young people sit at home on sofas

Moving miniature athletes around on electronic screens

Older folks defy death and disability

with metronomes in their chests and with hips made of metal and plastic

Airports, hospitals, shopping malls

every place that Rip goes baffles him

But he finally walks into a classroom

Old man knows exactly where he is

This is a school- he declares

² The Postmodern Condition: A Report on Knowledge, trans. Geoff Bennington and Brian Massumi (Manchester: Manchester University Press, 1984). Trans. of La Condition postmoderne: rapport sur le savoir (Paris: Minuit, 1979)

³ Deleuze, Gilles and Guattari, Félix (2004 [1972]) Anti-Oedipus: Capitalism and Schizophrenia, trans. Robert Hurley, Mark Seem, and Helen R. Lane (London: Continuum)

We used to have these in 1907

Only that the blackboards are now white”

This was the departure point for a focus group discussion where students discussed at length about what constitutes a classroom? What’s a human body? What constitutes technology? Are these absolutely different or they have intersections and create new meaning? One student shared a news clip that highlighted about the first robot teacher in a school in Bangalore, India. Revolutionising the Classroom space in the world of Artificial Intelligence, humanoids robots as teachers were introduced to assist for classes 7, 8 and 9 for Physics, Chemistry, Biology, Geography and History. With robotic humanoids performing as teachers in classroom, the human and non human entanglements become quite complex and makes one question that in the new techno-regime, Is the teacher becoming a technology geek? Or a technological material object like a robot becoming a teacher? This inhuman trajectory of technology or the technological trajectory of human beings are important to be discussed from the Deleuzian perspective of becoming and unbecoming⁴.

Virtual Experience through a Physical Mobile

Let’s take the example of mobile phone as an object. With each mobile device, there is an invisible tail, much larger than the physical device itself, attached to it, what is often understood as the mysterious. So on one side, the object is an ordinary physical material thing that occupies a space, and on other, it is an unexplainable reality. Deleuze and Guattari developed the second kind of reference to the object as a desiring machine. This is almost like asking what does your laptop screen think? What does your tablet want? Now how does the physical or the digital object desire? For instance, how does a mobile phone desire? Can we say that a mobile phone desires us to see what it desires? Contemporary cultural productions like British Science Fiction anthology Black Mirror in a satirical tone depicts the digital objects of all kinds that desire us to see, and also desire us to not see what it desires and what it doesn’t⁵. We may thus say that each object hides its essence inside the physical object. This is the premise of Object Oriented Ontology that gives preference to the non human entities and their existence outside of the human consciousness, something that mobile phone does.

⁴ Deleuze, Gilles (2004) Difference and Repetition, trans. Paul Patton (London, UK: Continuum).

⁵ Brooker Charlie. Black Mirror. 2011. 5 Seasons. This sci-fi anthology series explores a twisted, high-tech near-future where humanity's greatest innovations and darkest instincts collide. Starring: Jesse Plemons, Cristin Milioti, Jimmi Simpson.

When we talk of the mobile screen or the screen that displays audio video, we may say that the surface of the content of the video is given a body. The moving image ultimately then becomes, a movement of surfaces and this movement of images along with their surface creates an interaction with the viewers. Deleuze, in this reference of the multi sensorial effect that the physicality generates, calls this material world as a dynamic, unfolding, continuous and multiple universes that thrives on a fluid form of materiality⁶. We may in that case conclude that the tactile connection with the screen's surface is not only about the plane from the haptic viewpoint, but is also dependent on the close or the far vision. This sensuous closeness to the image and the screen depends on embodied responses and relationship with the viewer. The responses may be cognitive, cultural, sensual or affective, as in case of Deepak. The larger social and material circumstances in which the screen exists provides for a multi-sensorial experience through varied comparable extensions inherent in sociology, culture, illusions, linguistics, gender and even religion. From the semantic viewpoint screen also provides for the selective revealing and hiding the parts of haptic visuality making the experience more performative and abstract.

In contemporary times, if we look at the academic spaces, surface of material like screen in a classroom turns into a site of actual architecture. The projection screen that is used in urban classroom spaces in place of the traditional black/ white board creates an interaction space for the students that involve a phenomenological transformation and a varied range of experiential response. The variety of responses and the individual meaning making process is characterised by the hyper-presence of a variety of objects within the psychological, social and political dynamics among students. This response is positioned within a specific culture that the student comes from. The classroom and the academic culture that collectively takes shape further add to this process of negotiation, mediation and perception.

Social, Political and Cultural Aspects of Material Objects

Different types of machines match different social and cultural forms. When we engage with the practice of their circulation and context in a technology driven society, we find that the production and distribution work of such socio-technological systems has a cultural and economical significance. With

⁶ Deleuze, Gilles, and Felix Guattari. "Introduction: Rhizome." In *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 1987. 3-25

the growing number of technical devices around us, this may be understood from the concept of Acceleration. For accelerationists, technology must be intensified and multiplied in terms of the devices it can extend its form to. The form that is globally accepted is the best one for the humanity since it helps favour automation at a larger level. They aggressively favour the merging of the human and the digital. Capitalism and Post Modernism aids in this uncontrolled economic and technological global business.

Nikhil Anand has analysed complex infrastructures like these as a concept of cultural anthropology. His work studies the *PoliTechnics* of the access to water resources in Mumbai and how this access is controlled through various power channels⁷. He classifies the distinction of these channels into public and private. Anand's work also substantiates what Larkin has theorised regarding technology and infrastructure through the systemic operations of material things⁸. These operations give these materials greater relevance than that of being only objects. The knowledge of such operations is not independent of the people working on and with these objects. Infrastructure there works on several layers creating a network of people and resources. For instance, Anand's study brings together a network of engineers, slum dwellers, municipal corporators and environmental activists as they form a system to deal with the availability and non availability of water.⁹

Coded Structures of Control

The rituals of discipline and control have also become an inseparable part of university teaching profession and they raise some critical questions on the process of learning and nature of communication and interactivity in educational spaces. These tools are dominated by highly problematic agencies that classify individual students as information codes. The current pedagogical practices in a complex infrastructural setup cannot be understood without studying these highly disruptive and psychologically dominating approaches. There is also a huge distinction in the way these processes operate in a government and a private set up.

⁷ Anand N. 2012. Municipal Disconnect: An Object Water and its urban infrastructures. *Ethnography* 13(4): 487–509

⁸ Larkin, Brian. *The Politics and Poetics of Infrastructure*. 2013. *Annu. Rev. Anthropol.* 2013. 42:327–43 First published online as a Review in Advance on August 21, 2013. Access provided by London School of Economics and Political Science on 11/11/15. For personal use only

⁹ Anand N. 2011. *PRESSURE: The PoliTechnics of water supply in Mumbai*. *Cult. Anthropol.* 26(4):542–64

When we look at the relationship between classroom infrastructure and the play of economics in Government and Private universities in India, we realise that the surveillance and control mechanisms work at different levels in both government and private setups. It is important to mention here that the dynamics of design, flexibility and adaptability of the technological devices in academic settings and the open use of new technology facilitates collaborative learning, reciprocal teaching and co-creation of content in the Socio-technical cultural paradigm of education. However, this brings to light the design challenges in organising academic courses heavily loaded, accessed and distributed with technology and the extent of technology based content in the Indian curriculum.

Whenever I reflect through students' responses and interactions about technical devices while I engage with their creative artefacts, I always go back to the questions that stem from the work of Deleuze, Guattari and even Foucault- Is education a product? Are the Student customers? Are we the Professors mere tools to deliver desired outcome? And is university a factory? Also, engaging with these students' networks where they share such creative artefacts comprising of poetry, short stories, images and even memes; we may argue that they reflect the 'representational thinking' in terms of the way collectives work and these collectives are always in flux where these artefacts touch each other and intersect with each other at several nodes. This assemblage is constituent of reality, representation and subjectivity, we may call it as Mega Assemblage or a hyper assemblage as detailed by Deleuze and Guattari. To quote Deleuze and his concepts of Assemblage, "The school is a power centre which is molecular and exercises its power on a micrological fabric in which it exists only as diffuse, dispersed, geared down, miniaturised, perpetually displaced, acting by fine segmentation, working in detail and in the details of details." Technology like videotised lessons, corporate power point presentations reinsert this molecular and micrological fabric through special conceptualisation of student body. These corporatized and highly private notions of education have also led to the increased fee structures making education inaccessible to many.

Conclusion

For many years, the study of physical infrastructures was limited to Marxist analysis of base and superstructure. But to study techno systems of infrastructure and material world anthropologically, we require ethnographic retooling. Taking infrastructure as a socio-cultural object of examination, it becomes an important tool to understand how control and discipline is used on both objects and

subjects. In this paper, I have explored the dynamic subjectivity between the subject and the physical object in a classroom. Exploring the meaning of the senses; referring to the mimetic technologies: that create, our pre-existing relation to the world through sense perception and knowledge and mapping the contemporary urban classrooms, I have tried to discuss the new infrastructural systems of teaching-learning and content creation.

Over the past five decades, and especially over the past few years, much of the world has got faster. Working patterns, political cycles, everyday technologies, communication habits and devices, the redevelopment of cities, the acquisition and disposal of possessions – all of these have accelerated in education sector. Meanwhile, over the same half century, almost entirely unnoticed by the media or mainstream academia, accelerationism has gradually solidified from a fictional device into an actual intellectual movement: a new way of thinking about the contemporary world and its potential. This paper is relevant because we must reflect on the Modern Infrastructure in Indian Classrooms and the study of the Techno- Regime of Materiality and Immateriality from Deleuzian And Guattari's perspective in order to understand the parallel and intersecting narratives of Posthuman technoscapes: Digital, virtual and the machinic

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