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Redefining the 'Ethics and Aesthetics' of Concrete in Contemporary 'Isms' of Architecture

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ABSTRACT

This research paper is an 'embrace of concrete'. It's about millenniums of evolutionary changes of the material - which is often questioned at being a material - still struggling to get itself defined; getting better, and perhaps new. The paper represents the developments and innovations in concrete; the material which has been at the core of contemporary discussions and experiments, leading to avant-garde horizons exhibiting its capabilities and possibilities. It aims to comprehend the imminent capabilities and dimensions of aestheticized morality of concrete in the contemporary architecture, spurred along its evolutionary process. It's about knowing the 'whats' of concrete and an attempt to provoke discussion and study of the material. Further, the objective is to establish a relation between the developments in concrete, and the developments in architectural languages and philosophies generating the so-called contemporary 'isms' of architecture with redefined 'ethics and aesthetics' of the material. The analysis contributes valuable sagacity into concrete's prolonged trajectory as an architectural material and is an insight into what the future for such an ancient material looks like. The overall vision is to anticipate what more is yet to come out from concrete.

Keywords: Concrete; Architecture; Contemporary; Ethics; Evolution.

1.0 Introduction

Concrete has been a companion of mankind from over a dozen million years when the human race just realised the importance of shelter as a fundamental requirement. Concrete appeared and disappeared, and then appeared with a new face, and disappeared back and then appeared afresh, again with **distinctions**. The **non-linear history** and evolution of concrete - with a lot of drifts causing repeated mutations ultimately led to speciation - created varied species of the material which are not completely interlinked. Moreover, concrete is a hybrid material which combines the properties of its constituents to achieve a different set of characteristics. This hybrid nature, which is further characterized by the duality of states i.e evolving from liquid to solid has been at the core of contemporary discussions about the undefinable properties of the material.

The overall aim of this paper is to comprehend the imminent capabilities and dimensions of

aestheticized morality of concrete in contemporary architecture, developed along its evolutionary process. The material has undergone numerous advancements and developments which has opened up new horizons giving rise to new styles and languages. The hypothesis, therefore, revolves around the notion that later visualisations in concrete have sculpted architecture fostering new styles and languages on the way; and the same is true the other way around with the new styles & languages extracting more out of concrete opening new horizons for the material and its innovation, with a lot more expecting to be revealed.

"...submissive and strong as an elephant, monumental like stone, humble like a brick" - concrete is a mongrel material.

The main objective of this paper is to investigate the potentials and unknown horizons in concrete architecture. Although, concrete is an ancient material. But what we consider modern concrete is still very young and is a byproduct of

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only about a century old exploration and experimentation.

The paper progresses with a specific focus on following objectives to achieve the hypothesis:

- To trace and analyse the evolutionary process of concrete.
- To establish and describe concrete as a process, rather than solely a material.
- To comprehend and outline the emergent opportunities.
- For concrete architecture.
- To analyse the innovative experimentation in concrete, addressing the processes of form development and derivation for the contemporary 'ism' of architecture.
- To investigate the potentials and unknown horizons in concrete architecture.

The study would seek to analyse the extents to which concrete has shaped architecture and the extents to which architecture is shaping concrete. It would talk about the role of concrete in emerging architectural styles and languages. The existing timelines would be traced, addressing the possible gaps; checking on whether we missed something in between or if there was a stage of development which was lost or not referred. It would comprehend the impacts of the ever-advancing technology on such an ancient material scoping the hybridisation of these advancements in the forms we derive from concrete. It would target upon the belief that the saturation point for concrete is yet to be achieved, with numerous potential contemporary architectural styles still waiting to be discovered. The overall vision is to anticipate what more is yet to come out from concrete.

2.0 Literature Study

Alberto Giacometti - one of the important sculptors of the 20th century - while working precisely on the proportions of a human head, replied citing André Breton's - "Everybody knows what ahead is and what it looks like!"

"No, I don't know what it is. I'm interested to know!" I interpret this in the context of concrete - since, "Everybody knows what concrete is. And what it does"; I believe-

"I don't really know what it is.

Perhaps, I'm interested to know.

And I won't offer too rare to analyse the capabilities of concrete.

To situate the research within the existing knowledge, and extract what suits the hypothesis, aim and objectives of the paper, a seven-chaptered literature study would be analysed under projected parameters. The first chapter talks about the historical evidence which demonstrates the non-linear history of concrete. It shows how the material was invented and reinvented many times, back and again - that too, with distinctions; and that there's still scope for reinvention. The second chapter involves the discussion about the materiality & versatile nature of concrete and tries to establish 'concrete as a process' and not merely a material. It's about the identity crisis of concrete, even though it fired a revolution on grounds.

The third chapter discusses the intervention of technology and the way it is revolutionising the 'ethics and aesthetics' of concrete. It's about new opportunities to delve more into the topic and assign a new character to concrete. Fourth chapter and Fifth chapter include information about the alternative reinforcements and the surface treatments being experimented on concrete making way towards giving it new definitions and identities - a direction towards the reinvention, perhaps. In the Sixth chapter, various experiments are listed where the daring architects seem to push concrete beyond the knowns and try to squeeze out its unknowns; at the same time trying to create a new style and language from the ancient material. The seventh chapter envisages a vision to link developments in concrete which lead to the creation of a new style or philosophy of architecture, and also the developments in architecture which demand modified material properties. The ultimate prospect is to seek clues for future reinventions of concrete by analysing evidence from the analysed timeline.

2.1 History: Mutation, speciation & evolution

The saga of concrete is so ancient that we don't even know precisely when and where it begins. The historical analysis of concrete reveals the successive evolutionary developments and how the material was being developed differently in many different places. The non-linear history & evolution of concrete - with a lot of drifts causing repeated mutations ultimately led to speciation - created varied species which were not completely interlinked.

It is a series of discoveries, experimentations, and mysteries; a by-product of thousands of years of evolution. To start with, cement and concrete are NOT the same thing. Cement, a combination of powdered limestone and clay, is an ingredient in concrete beside water, sand, and gravel. To trace the history and origins of concrete, we must trace the use and employment of its components.¹

- Rediscoveries & Mutations: Repetitive reinventions, every time with distinct material nature.
- Primitive Concrete: Characters remained debatable, and properties versatile.
- Early uses stood unjustified & hunt for appropriate execution persisted.
- Historical analysis: Non-linear history with potential gaps in the existing timelines.

What do the dictionaries say about Concrete?

- A simple “English Dictionary” mentions that “Concrete is composed of particles united in one mass”.
- A small “Dictionary of Science”, states that “Concrete is a building material made of stone, sand, cement and water.”
- A more advanced “American science and technical encyclopedia” states that Concrete is a “versatile engineering material consisting of a Hydraulic cementing substance (usually Portland cement), aggregate, water, and often controlled amounts of entrained air. Concrete is initially a plastic, workable mixture which can be molded into a variety of shapes. Strength is developed in the hydration reaction between the cement and water. e products, mainly calcium silicates, calcium aluminates, and calcium hydroxide, are relatively insoluble and bind the aggregate in a hardened matrix.”
- An older Norwegian encyclopedia states, as an introduction, that “Concrete is a building material of a cured mixture of sand, stone, cement and water.”

Hence, a material with history as a dozen of millennia; used today in largest of the quantities, and surrounding us from anywhere to everywhere - has no particular definition till date.

Does that mean that we have failed to realise the actuality behind the material and understand the ‘whats’ of concrete’s identity?

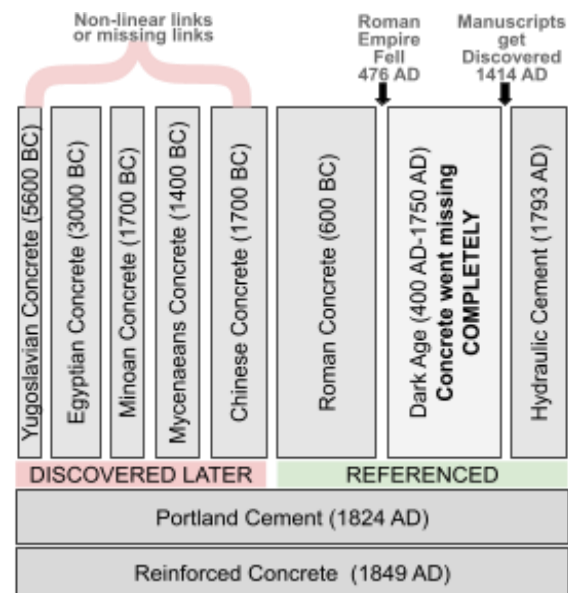
Or is it that the vocabulary is insufficient to state what all the material is about and what all it has to say?

Or shall we not consider concrete as a material of the past and start from scratch to look into what it actually is?

Or is it that we’re still at the very primitive stages of the material? And that concrete has no history at all?

“Why when other materials have developed their own distinctive definitions and aesthetics, has concrete not?”²

Figure 1: Historical Analysis of Concrete



Concrete suffers from an identity crisis and can't be assigned with a single definition. It's all vague and ambiguous.

2.2 Material's materiality

Concrete has a hybrid nature and it acquires the properties of its constituents to accomplish a discrete set of characters. This rich and diverse ocean of innovations through exploration and practice has forestalled concrete to have “a fixed underlying traditional and accepted aesthetics”. This multi-faceted background of the material has given a fertile ground for investigation & exploration for new properties and character of the material.

Concrete, both in terms of making and setting, is rather a process and not just a material. *It's the*

element of human labor and rationale that produces concrete.³

The initial processes of reaching the right proportions, followed by the process of making the correct mix and afterward the process of framing and pouring into the desired molds, right before the final process of curing - all play a crucial role in deciding the final material. Any alterations in any of the processes leads to altered properties of the material. Hence, the material is not just a material, rather an outcome of a series of finely inspected processes potential of adding/subtracting an identity to it.

Frank Lloyd Wright proclaimed concrete as a 'mongrel' material - neither one thing nor another.⁴ He asked in a rather perplexed way,

"Is it a stone? Yes and No.

Is it a Plaster? Yes and No.

Is it Brick or Tile? Yes and No.

Is it Cast Iron? Yes and No.

Poor Concrete!

Still looking for its own at the hands of Man."

From many of the typical class qualifications - smooth/rough, ancient/modern, fluid/solid, natural/artificial, basse/spirit - concrete figures out how to circumvent, slipping to and fro among categories. The half breed nature, which is additionally described by the "duality of states i.e. evolving from a suspension fluid to firm rocky solid through a mold", has been at the core of contemporary conversations and researches about the undefinable properties of this material in the field of architecture.

The hybrid nature and duality of states of the material have always kept it in the limelight of the contemporary discussions and experimentation resulting in improved material capabilities & abilities. It can be liquid & solid, natural & artificial, smooth & rough, modern & ancient.

- Comparison with other construction materials; malleable nature.
- 'The Process' makes concrete a mongrel material.
- Béton Brut emerged as a revolution;
- material celebrated for aesthetics.
- Bare Concrete led to newly assigned identity, a newmaterial discovered from older ones.
- Controversial nature & varied perception led to there-discovery with acceptance of material in a new form.

Figure 2: Unite d'Habitation Depicting Beton Brut



SUBJECT	PARAMETER	INFERENCE
Beton brut	Aesthetics of concrete	Redefined
Corbusier's concrete	Form advancement	Revolutionised
Bare concrete	Identity, personality	Newly Assigned
Controversial nature	Material perception	Re-discovered
Brutalism	Original beton brut, turned Brutalism	A philosophy, not a movement

2.3 Archi-'tech'-ture : Architecture & technology

Over the advent of past decades, technology has successfully strengthened its hold over almost every sphere, and architecture is no exception. Technology in architecture is altering both the process and end result in creating something of a new breed of innovative architecture that is disrupting the industry and heading in unexpected and exciting directions. Contemporary architects are seeking new horizons in design, pursuing algorithms, experimenting with adaptability, advanced mechanics, 3D printing and

reality, and the rundown of developments is of extensive length”.

The previous 50 years has clarified that of the apparent multitude of materials as of now accessible, concrete stirs the imagination more than any other. Thus, the drive to innovate has been in the headlines of the modern world. It is an incredibly malleable material for which, in recent years, new technologies have only scratched the surface for exploring ways to push its limits. The need is to explore and analyse the trajectory of concrete as a material and the ways in which its physical properties, application, and treatment largely go unrecognized and are commonly misunderstood.⁵

Figure 3: Curved Concrete Plate Made Using Additive Manufacturing



- Digital Fabrication and additive manufacturing revolutionized design & architecture for the modern world.
- Contemporary Philosophy, avant-garde form generation & realisation, aided by software.
- Dynamic framework leading to modified structural language & complex geometries of form.
- Technologically advanced techniques & approaches transform the material abilities & capabilities.

Architectural signatures have evolved over the years. What was considered a beautiful building or structure a decade ago, might be a rubbish building for many today. Contemporary world demands for contemporary shapes & volumes to get formed. Free-form architecture is one of the most significant patterns in contemporary architecture. This has resulted in modifications in the material properties & concrete, being the most widely used one, has been experimented upon the most. The integrated processes of form generation & form realisation have

been transformed in the realm of digital fabrication, that too to astonishing levels.

2.4 Alternative Reinforcements

Figure 4: Samples of Modified Concrete



Though aggregate is usually sand and gravel, nearly anything can be added to the cement and water mixture to create many diverse forms of concrete (F.Bostwick, 2013). Modified Concrete with new reinforcements; redefining the material capabilities in design.

- Fibre Reinforcements such as Glass Fibre Reinforced Concrete (GFRC), Carbon Fibre Reinforced Concrete, Fibre Reinforced Polymer Concrete. Concrete reinforced with fibreglass permits slim cross-segments as well as plastic structures to be realised. Intervention of fibres improves both the mechanical play and strength of the composites and develops their usefulness. These composites show appealing malleable and flexural properties and low drying shrinkage. Fiber-strengthened polymers (FRPs) are a group of solid and lightweight composite materials consolidating filaments and polymers. It permits a potential for fabricating complex, double curved architectural components, without the need of mold.
- Material Modifications in form of Infra-light weight concrete, Epoxy Coated steel.
- Innovative approach as in textile concrete, 3D printed reinforcement. Textile concrete, which means concrete reinforced with webbing, has a generously higher burden bearing limit, contrasted to fiberglass reinforced concrete. Three-dimensional (3D) printing is an alluring fast prototyping innovation for the creation of 3D structures by the localised statement of a folio fluid onto slight layers with specialized applications.

Additive manufacturing of reinforcements for concrete utilizing manufactured material gives advantage permitting adaptability in shape and size of the structures, further aiding in understanding the perplexing forms and designs by architects who dare to experiment with the material potentials. This has revolutionised the considerations for designing in concrete, blurring away the age old misconceptions and giving the material a new identity.

SUBJECT	PARAMETERS	INFERENCES
Additive manufacturing	Form generation	Avant-garde
3D softwares	Form realisation	Improved
Dynamic Framework	Aesthetics, Structure	Contemporary
Alternative reinforcements	Form creation	Revolutionised
Alternative reinforcements	Design Language	Newly Assigned

2.5 Expression through surface

In the twentieth century, “architects by & large, adulated concrete for its lack of bias & capacity to make abstract un-ornamented surfaces, convoluted bends, and uniform floor slabs. In contemporary architecture, concrete’s properties are much more broadly varied.” Architects are now exploring different avenues regarding processes to make concrete lighter, change its shading, and even change its opacity. Subside asserted that “If the structure is not deemed worthy of being shown, the architect has not fulfilled his mission”.⁶

The utilization of cement in present day brains of designers isn’t just about the formation of clear shapes. It is about the vibe of the material under the eyes, just as light and shadow created—and lastly, it is about the clean sharp lines which can deliver an exact and fragile bit of art instead of only a structure. Concrete can simply change a space into a flawlessly executed masterpiece and what it seeks is imaginative reasoning and experimenting psyches to transform the surfaces.

The exhibiting surfaces mold the defining aesthetics of the structure. Innovative facade treatment assign new aesthetic & identity to concrete, leading to unknown design possibilities, redefining the material’s identity.

- Crinkle concrete employs concrete both acoustically & aesthetically
- Washed out concrete is a mainstream method of changing the visual appearance of concrete is to skim the top layer of the solid’s mortar because of which surface changes, as the materials added

to the solid rise up out of under this top layer.

- Photographic concrete Utilizing a “photolithographic cycle, the photograph is moved onto the concrete in a screened pattern, which is applied to a plastic film. This photo-concrete film is set into the shuttering, where the solidifying retarder on it guarantees that concrete dries out at an alternate rate in different places.
- Shuttering stencils permit either surface ornamentation or exceptionally complex vector illustrations to be made offering the opportunity to try different things with the material surface.

Bio Receptive concrete has various layers which empower the development of greenery and lichen, making each divider made with the material a one of a kind and ever-evolving one.

Figure 5: Crinkle Concrete



2.6 Pushing the design limits

Architects and designers have started on a wonderful journey to push concrete to its limits so as to bring out the better, or even best, out of the material. How wonderfully contained concrete is to stand confidently and gracefully at each stage of experimentation!

2.6.1 Gravity defying structures

Figure 6: Gravity Defying Structures



- **Highly Cantilevered Structures** - Cantilevers are the original “look at me!” architecture. Their apparent independence of gravity makes them thrilling to look at but also makes them an effective indicator of not having to do things the simplest way. Yet some architects push the limits, certainly challenging with Newton’s universal law of gravity, to design structures that not only seem to defy reasoning but are excellent at that.
- **Architectural Tilts** - To challenge gravity, is to challenge the very primary laws of nature. Architects find pleasure in showing the range to which they can establish marvelous structures - and what can be better than realising a tower which seems to be falling, leaning to jaw-dropping tilts.
- **Non-vertical Walls** – Walls are always expected to straight, vertical and maybe sometimes curved. But going against expectations is what the tendency of architects of today is. One such example is Cidade das Artes, Rio de Janeiro. Almost all the walls are either inclined or curved, and are further not rectangular - all made of concrete.

2.6.2 Facade systems

Figure 7: Innovative Facade Development



- Load Bearing Facades
- Fibre-C System
- Translucent Concrete

2.6.3 Interpretation of concrete

- Louis Isadore Kahn
- Felix Candela
- Tadao Ando
- Zaha Hadid Architects
- Antony Gibbon

Structures of Corbusier and the concrete identity & philosophy he created is, interestingly, not the only time concrete has revolutionised architecture. Many contemporary architects have been experimenting with concrete, pushing it to the limits to squeeze out the unknown languages and perhaps, come up with a new architectural style or language; many of them leaving a permanent effect and becoming the pioneers of concrete architecture.

Figure 8: Concrete Helix Structure by Antony Gibbon



EXPERIMENTS	APPLICATION	INFERENCES
Gravity Defying Structures	Successfully pushed concrete beyond the limits and possibilities	Modified concrete in terms of structural capabilities
Facade Systems	Innovative application of concrete in exoskeletons of buildings	A new typology of architecture in terms of aesthetics, form and structure
Interpretations of Concrete by Various Architects	Louis I Kahn	Monumental approach
	Felix Candela	Plasticity in reinforced concrete
	Tadao Ando	Minimalistic approach
	Zaha Hadid	Parametric, Free-form concrete
	Antony Gibbon	Twisting Concrete Ribbons

2.7 Concrete and the architectural ‘isms’

2.7.1 Brutalism

Figure 9: Brutalist Building - Unite d’Habitation



With the concept of 'Béton-brut'- raw concrete - coined by Le Corbusier in the 1950s to describe a new kind of building: austere, unadorned, monolithic, and constructed almost entirely in exposed concrete, concrete got a completely new identity and perception, getting itself redefined in rather contemporary grounds. The revolutionary ethical approach to the material invoked highly diverse reactions & resulted in the birth of a new architectural movement, which was later recognised as a philosophy.

2.7.2 Critical regionalism

Figure 10: Critical Regionalism - Pulitzer Foundation for the Arts



Emerged as an architectural concept in the early 1980s mainly from the works of Tadao Ando, the novel approach to both universalism and localism apprehends the local culture and the overarching globalization but in a new abstract way. Targeting the very ethics of design & culture, it came out to be greatly identified with concrete - at the same time assigning another identity to the revolutionary material.

2.7.3 Deconstructivism

Literally translating to 'breaking down', it includes the unleashing of tremendous possibilities of playing around with forms & volumes and doesn't follow 'rules' or acquire specific aesthetics. It is characterized by fragmentation, interestingly manipulating a structure through the transformation of basic volumes of architecture in order to recombine it in new hybrid shapes. The philosophical style based on abstract art philosophy and absence of principles, invoked numerous developments in concrete - being the core ingredient - demanding improved capabilities of the material revealing the

new horizons for, perhaps, a new style in the contemporary world of architecture.

Figure 11: Royal Ontario Museum in Deconstructivist Style



2.7.4 Parametricism

Figure 12: Parametric Facade of Walter Jack Studio



The avant-garde style in contemporary architecture refers to the application of defined variables and parameters to inform the design of complex geometries and structures through a process based on the algorithmic evaluation. With its advent, a need to delve more into the known characteristics of concrete and the search for improved concrete capable of achieving the required forms and structures also started, leading to innovations in the material.

2.7.5 Digitalism

Digital tools, today, have become ubiquitous within the sphere of architecture ranging from the concrete used in additive manufacturing to AI-controlled stimulators guiding the design process.

The properties of concrete demanded by innovations in digital tools and their involvement in design and fabrication in architecture led to improved versions of centuries-old material which can be labelled as, perhaps, a fresh and novel recognition capable of working with the advanced tools of the modern world.

Figure 13: Concrete Pillars Made using Additive Manufacturing



3.0 Case Study

3.1 MAXXI museum, Rome

“It’s a confluence of lines – between what is ‘within’ and what ‘without’”

~Zaha Hadid

Figure 14: MAXXI Museum, Rome



PARAMETER	INFERENCE
Material	Single pour concrete
Form & Geometry	Curved, interlinking geometries
Technology	New 3CS Concrete
Design approach	Contemporary Design
Aesthetics	Not addressed innovatively
Concrete’s Identity	Redefined
Architectural Style	Deconstructivism

MAXXI aims at promoting art and architecture through a collection, conservation, study and exhibition of contemporary works (Arch20). “It is

not just an object, but a program” to which you can add items.

The design of MAXXI Museum is a series of continuous strips of concrete stacked on top of each other with cantilever galleries made of single pour concrete. This was achieved by a new concrete mix termed as 3SC concrete with self-compacting, self-compressing and adequate self-curing characteristics. Architect’s experimentation with concrete properties and capabilities led to new additions in the long list of aesthetics and morals of the material.

3.2 Heydar Aliyev Center, Baku

“You don’t know where it starts and where it ends”

~Zaha Hadid

Figure 15: Heydar Aliyev Centre, Baku



The complex comprises a concrete base structure combined with a space frame system made of GFRC panels giving it a fluid, curved finish with an innovative and avant-garde design. The contemporary complex, a set of free-form curves light-as-air, seems to be all form & no structure.

PARAMETER	INFERENCE
Material	RCC, GFRC
Form & Geometry	Free Flowing, Monolithic
Technology	Parametric modelling
Design approach	Contemporary Design
Aesthetics	Smooth, white finish
Concrete’s Identity	Redefined
Architectural Style	Parametricism

The design of the Heydar Aliyev Centre establishes a continuous, fluid relationship between its surrounding plaza and the building’s interior (S. Safar). This was achieved by using an ingenious and elegant structure system, mainly consisting of concrete. The architect’s successful experimentation with the material capabilities in terms of form

development and aesthetics has assigned concrete with a new identity.

3.3 Cidade das Artes, Rio de Janeiro

Figure 16: Cidade das Artes, Rio de Janeiro



The building is a small, raised city organized around a terrace ten meters above ground, floating upon a public park. The Cidade das Artes is a mass of concrete forms with the materiality continued inside and out. Huge swathes of pre-compressed, unrendered reinforced concrete reminiscent of modern Brazilian Architecture impart solidity (WordPress, Brazilian Concrete).

PARAMETER	INFERENCE
Material	pre-compressed concrete
Form & Geometry	Curved, floating, undulating
Technology	Not addressed innovatively
Design approach	Contemporary Design
Aesthetics	Dark Grey, super smooth finish
Concrete's Identity	Redefined as Brazilian Concrete
Architectural Style	Modernism

Undulating, curved walls surmounting the two concrete roof plates, cantilevered to their extremes, have been supported on slanting columns. The challenge has been accepted beautifully by concrete which is laid naked inside and outside the building. This has consequently led to elegant structural systems and contemporary form development, showcasing the improved capabilities of concrete.

4.0 Conclusion

Concrete - with a diverse past, an ever-advancing present and a future uncertain - is undeniably not a material of our time, but a material of all times. The

developments in the material catalyse the advancements in the grounds of architecture fostering new styles & languages, which further urge for upgradation in the material capabilities; making concrete better and perhaps new. This rejuvenation establishes the inexhaustible potential of concrete and the fact that continual innovations make it a valuable material for new architectural concepts and philosophies; adding to the so-called contemporary 'isms' of architecture.

"The introduction of a new material could not but generate a new style"

~ A. Forty

Addressing concrete as a 'mongrel material' does not have to be perceived lowly and shameful - dragging down concrete to the bottom - but on the contrary, the most innovative derivations of concrete are the ones which have addressed the otherwise enigmatic and ambiguous nature of the material, leaving the designer and the user at the discerning end. The extensive pallet of reinforcements offers numerous identities and aesthetics. The need, however, is not only to convey the compositions in terms of mixing the materials together, but also the mixing of histories - histories, which are discontinuous, but diverse and meaningful.

From being a process intended by human labour and rationale; to being a 'mongrel material' - stigmatised on one hand, celebrated on the other - utilising technology to structure; interpreted in numerous pioneering ways further resulting in avant-garde architecture; concrete figures out how to circumvent, slipping to and fro among categories. The rich and diverse evolutionary process of the material has set it out on a prolonged trajectory, spurring along with progressive capabilities and horizons of its aestheticized morality.

There is no doubt that concrete is more versatile than it may appear. It has changed tremendously since its discoveries and re-discoveries, but still remains a novel material with incredible potential. *Construction in concrete is amongst the oldest of all building materials, and at the same time, it is one of the most modern* (A. Forty). It has shaped the architecture we know today, and that's exactly what it is still doing with an expected continuation in the future, carrying potential of bringing in a perhaps unknown style or language. This exhilarating resonance between concrete and architecture ensures that the concentration point in the material is still not

achieved. Concrete, as a material, has a lot to express and is yet to be reinvented to full of its potential. The need is to look forward and anticipate what more is yet to come out from concrete.

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