

SUGARCHITECTURE

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MD17MDES11005

**A Dissertation submitted to
Indian Institute of Technology Hyderabad In
Partial Fulfillment of the Requirements for
The Degree of Master of Design**

Guided by: Neelakantan P K



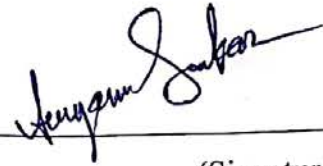
**भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad**

Department of Design

June 2019

Declaration

I declare that this written submission represents my ideas in my own words, and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the Institute and can also evoke penal action from the sources that have thus not been properly cited, or from whom proper permission has not been taken when needed.



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Approval Sheet

This thesis entitled – Title of my thesis – by – Student Name – is approved for the degree of
Master of Technology/ Doctor of Philosophy from IIT Hyderabad.

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Examiner



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Co-Adviser



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Chairman

Acknowledgements

Working on this project is harder than I thought and more rewarding experience than I could have ever imagined. None of this would have been possible without my guide and mentor **Dr. Neelakantan P K** and our Head of Department **Dr. Deepak John Mathew**.

Although this period of my life was filled with many ups and downs, my time in IIT Hyderabad was worth it. My time in the Master's program wouldn't have been made possible without Shweta Chawak who has always been friend, philosopher and guide to me during the course of time.

I would like to thank Vijay Kumawat and Priyadarshan Borah for helping me with printing and binding.

A very special thanks to Vivekananda Chary for helping me with all the framing and other technical support.

Making a project about "The Visual forms of Sugar" is a surreal process. I'm forever indebted to Dikshit Sharma, Deepak Baxla, Sumit Yempalle, Prakash Kumar, Manoj Malviya, Safina Dhiman, Ashish Choudhary, Ankana Sen, Joseph Tukka, for their help, keen insight, and ongoing support in bringing my photo stories to life.

And lastly my Sister Mandira Sarkar It is because of her encouragement that I have a legacy to pass on to my family where one didn't exist before.

Dedicated to
Ma, Baba & Antara

Abstract

I have been born and brought up in the Northern part of West Bengal, a district named Malda. Since my childhood, I have always known and have been told that one of the most important elements of our culture and heritage, along with the taste and food habits, is authentic Bengali sweets. These sweets which I have known since my childhood have different forms, shapes, tastes and colours. I have always wondered how these different types of sweets have evolved with time; who are the main creators of these sweets and what is the relation between us and sweets and its history. I am also interested in understanding the relationship of forms, colours and textures with these eatables. This has made me interested in understanding the visual forms of sugar; sweet products and its by products.

Coming from an architectural background, I started seeing similarity between sugar, added sugar products and architecture or the construction materials and a deep philosophical match in its forms, patterns and textures. This photobook is an approach to understand the conceptual similarities and differences between them.

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Introduction

Being born and brought up in the Northern part of West Bengal, a district named Malda. From my childhood, I have always known and told one of the most important elements of our culture and heritage, which come with the taste and food habits also is sweets, the authentic Bengali sweets. So these sweets which I have seen from my childhood have different forms shapes tastes and colours which somehow is related to geographical location are in the culture of Bengal. I also have always been wondering that how these different type of sweets have evolved with time and who are the main inventors of these sweets and what is the relation between us and sweets and how the whole thing started. This has always made me interested towards how these sweets have travelled to Bengal and from where these sweets and the phenomena of sweet have generated what the cultural and fundamental background of sweets in human society from where it evolved how evolution and the journey have been throughout so many thousand years. (Mucchi, 2017) Kristy Mucchi¹ said that if you want to know Western history, you have to see the history of sugar. So my primary culture, graphical location and food habits and taste have brought me to gain some Insight about how it's been the journey of sugar and how it has travelled to go to India and spread across various States.

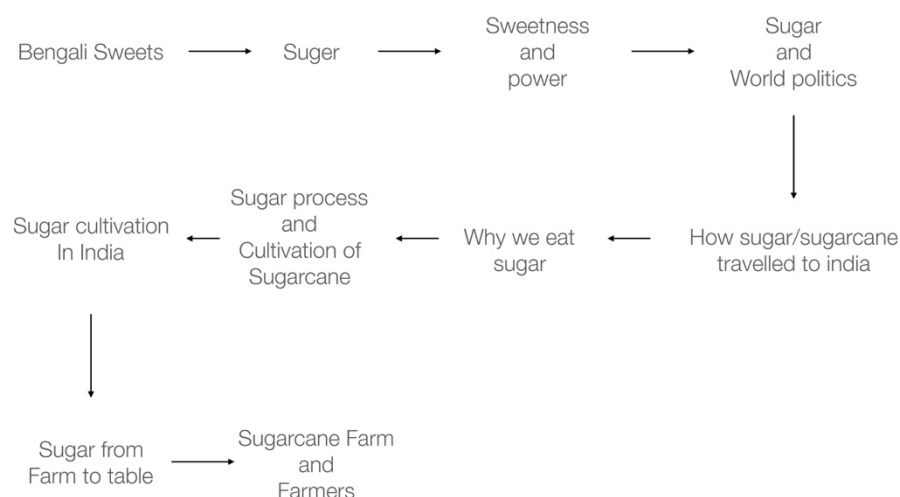


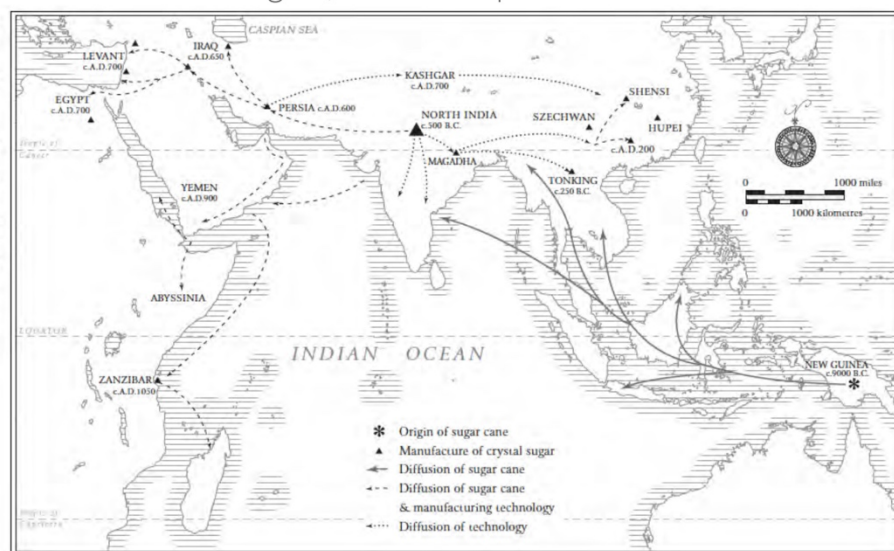
Fig1 1 Initiating Idea

¹ <https://www.saveur.com/sugar-history-of-the-world#>

So it is vital to understand that sugar as an element has travelled a long journey in these Thousand Years. It's not only about the taste sweet but also about how with time it has been used as medicine as spices as the symbol of royalty as currency as a medium for the growth of civilisations and many more.

So in the starting it was not precisely the sugar what we say today .First sugar was used in 10000 BC Honey was the queen. So people use to get honey where's the ice has not covered the land majorly if you talk about that's in Asia Africa and some part of Europe. So people used to get Honey from the bees and beehive, but it was not an easy job so at that time people have to travel to forests and hunt for honey. Then after 2000 years, it's found that sweetness can take different form shape and it can be cultivated people found sugar cane the first place where it started was New Guinea. Earlier they used to chew it to enjoy the sweetness.

Sugar , World Map and Time ?



Reference: Bittersweet THE STORY OF SUGAR, Peter Macinnis, 2002

Fig1 2 Sugar and world map

Sugar and India

1000-500 BC	500-600 BC	326 BC	350 AD	647 AD	1610 AD	1792 AD	1950 AD
Found	Medicinal properties	Medicinal properties	Crystallising	China Came to know form India	1st factory In India	Price hike and Found India Idel for sugarcane farming and production	Industrial development started

Fig1 3 Sugar journey and spread in India



Fig1 4 project starting

Process

2.1 History

During my first discussion with my faculty guide, we were discussing the project of how I can make a visual ethnography of sugar or sweetness. During this discussion, I have come to read a book named "Sweetness and Power". From the book, I have come to know how sugar spread in the world with time, how sugarcane was first cultivated in New Guinea in around first 9000 BC. After that, around 647 AD, China first come to know about sugar from India it took around more 1000 years for the people to build the first factory for manufacturing sugar at the industrial level. So the first factory of sugar was built in in the year of 1610 AD. People from India and around the world have

understood that the weather and surrounding of India are ideal for manufacturing sugar and getting cheap labours from here. After that, in the year 1792 AD. The first price hike was found in the history in India, and sugarcane farming started in industrial level production after that around 1958, the industrial revolution of sugar production happened. So these are few pieces of information which I have got regarding the history of the sugar or sweetness and how people have come across with time about the various properties of sugar other than only taste. How they have manufactured the sugar and sugar separated the molasses. (Mucchi, 2017)

2.2 Site Visit

During this process of reading about sugar, I've also visited a nearby village named Mamidipalli, Sangareddy. This village is nearby to our college. After taking a survey of that area, I found that this Village has around 10 to 15 farmer families who are related to sugarcane farming. Few more thing which I came to know with time from few of the staffs of IIT Hyderabad that these farmers have almost an area of 20 acres where they usually do the sugarcane farming.

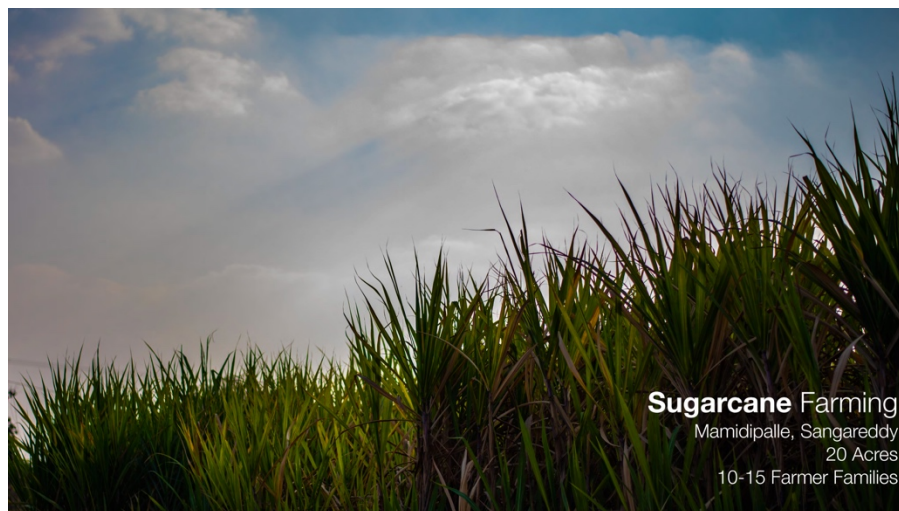


Fig1 5 Site visit to mamidpalle sugarcane farm area

During the visit in that village, I have also interacted with one of the oldest sugarcane farmers of that village named Jawan Walia. His age is 75 years. This person is doing farming for the last 50 years, and he is into sugarcane farming for 15 years. After electricity reached to their village, they started sugarcane farming rapidly. Before that, it was difficult for them to farm sugarcane because of the water scarcity in Telangana, that time named as Andhra Pradesh. This farmer has three sons who work on the farm other than studying in college, which also symbolises how this sugarcane farming has changed their financial abilities with time.



Fig1 6 Sugarcane farmer Jawan walia



Fig1 7Sugarcane farmer Jetala

During my visit to the farm, I have also come across one of the relatives one staff of IIT Hyderabad. His name is Jetala. He is 40 years old his farming for the last 20 years , and he is into sugarcane farming for ten years. There were also sugarcane farmers relatives who work as Shepherds. They are around 20 to 22 years old. And few older women also worked as Shepherds

they have a very particular type of dressing style. So these women and boy of 22 years old they carry the leave of sugarcane for their cows so that they can feed them.



Fig1 8 *Shepherds*



Fig1 9 *Shepherds*



Mapping People

Fig1 10 farmers and families in the village maniple

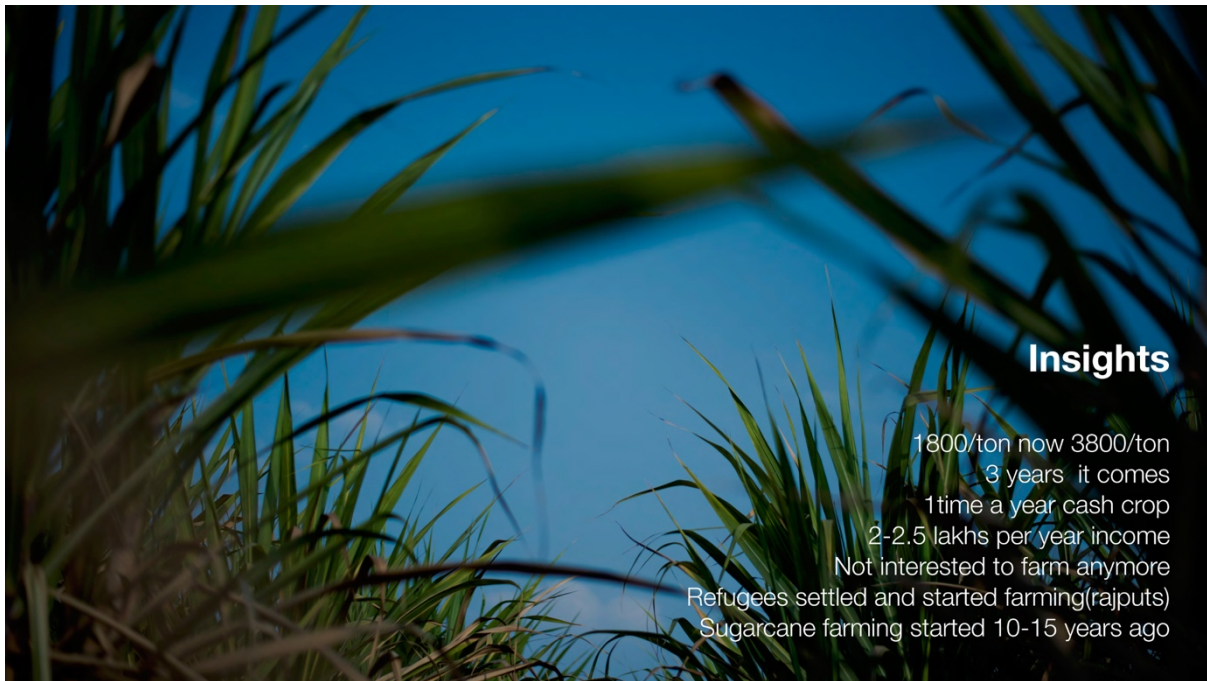


Fig1 11 Sugarcane farming insights of maniple village,sangareddy ,Telengana,India

During this visit I also came to know about this sugarcane farming is there generally farm once a year but the profitability of sugarcane is much higher than the crops it's almost three to four times four. Other observation and information which I have got from them that they generally get a price of 1800 to 3018 hundred per ton. They put this once in three years and which repeats for the next three years, and this is one time Cash crop. These farmers get to 2.5 get to 2.5 lakh rupees per year income from this sugarcane. But because of this globalisation and various type of industries they are not interested in doing this type of farming any more so, this can be a bigger problem in future for people in urban areas because farmers are not interested in farming anymore. During my visit in this village and the interview which I have taken from them, I came to know that these farmers are refuse who have started farming Here they are from Rajasthan and their basics from Rajput.

2.3 Types of Sugar

During my study of sugar, I also found there is a difference between sugars and added sugar to understand the primary differences between them also studied more so than after studying that I found sugars are the term which is referred by mono and disaccharides. Monosaccharides include glucose-galactose, and fructose disaccharides include sucrose lactose and maltose. Then sugar is only sucrose disaccharide made of two Sugars glucose and fructose

And then added sugar which is supposed to be to be the most harmful for our body Harriet sugar is the inclusion of various calorific sweetness included sugar and much extra sweetness where sugar is added. (<https://www.sugar.org/sugar/sugars/>, 2019)

Types of sugar

White

Brown

& Liquid

Sugar?

Sugars?

Added sugars?

(<https://www.sugar.org/sugar/sugars/>, 2019)

2.4 Photographing Sugar

Then after doing a few literature studies and going to a few reviews, I started exploring how I can do a visual ethnography of sugar or sweetness. Then I also partially started clicking the images of the product which are sweet and which are made of sugar, which has a particular with the taste of sweetness. So the first day I went to the shopping mall and got various type of chocolates and biscuits and whatever is prominently sweet. After that, I started clicking on the first day it was very random.



Fig1 12 Various types of chocolates lot 1



Fig1 13 14 Various types of chocolates lot2

I started seeing on the packaging of various products and by-products of sweet or sugar. Then after reading and understanding the packaging of sugar or sweetness, I started finding various important observations. Few of those are like if you get a 5 rupees gems packet which has 7 grams of gems, and then you get a 20 rupees gems packet where you have 8 grams of Gems, so it's basically the packaging of product how they try to understand two different classes and how they attract people for the same product with the same quantity but with different packaging.



Fig1 15 photography setup in classroom 618

It increased my interest and with time I started clicking Wafers, candies, chocolate, fruits, five stars, dairy milk and much more different type of chocolates and sweets. During this photographic journey of my project, I started finding that I have a keen interest in the patterns and the textures. These are generated in the sweets, so after 2-3 days I started clicking the inner product the main eatable which is inside the packaging. I started clicking it from very close I started clicking it from macro lenses. During this, I was also reading about sugar from different resources, so it was not only about clicking a photograph of sugar and its by-products from a very macro level but also relating with a proper context and concept.

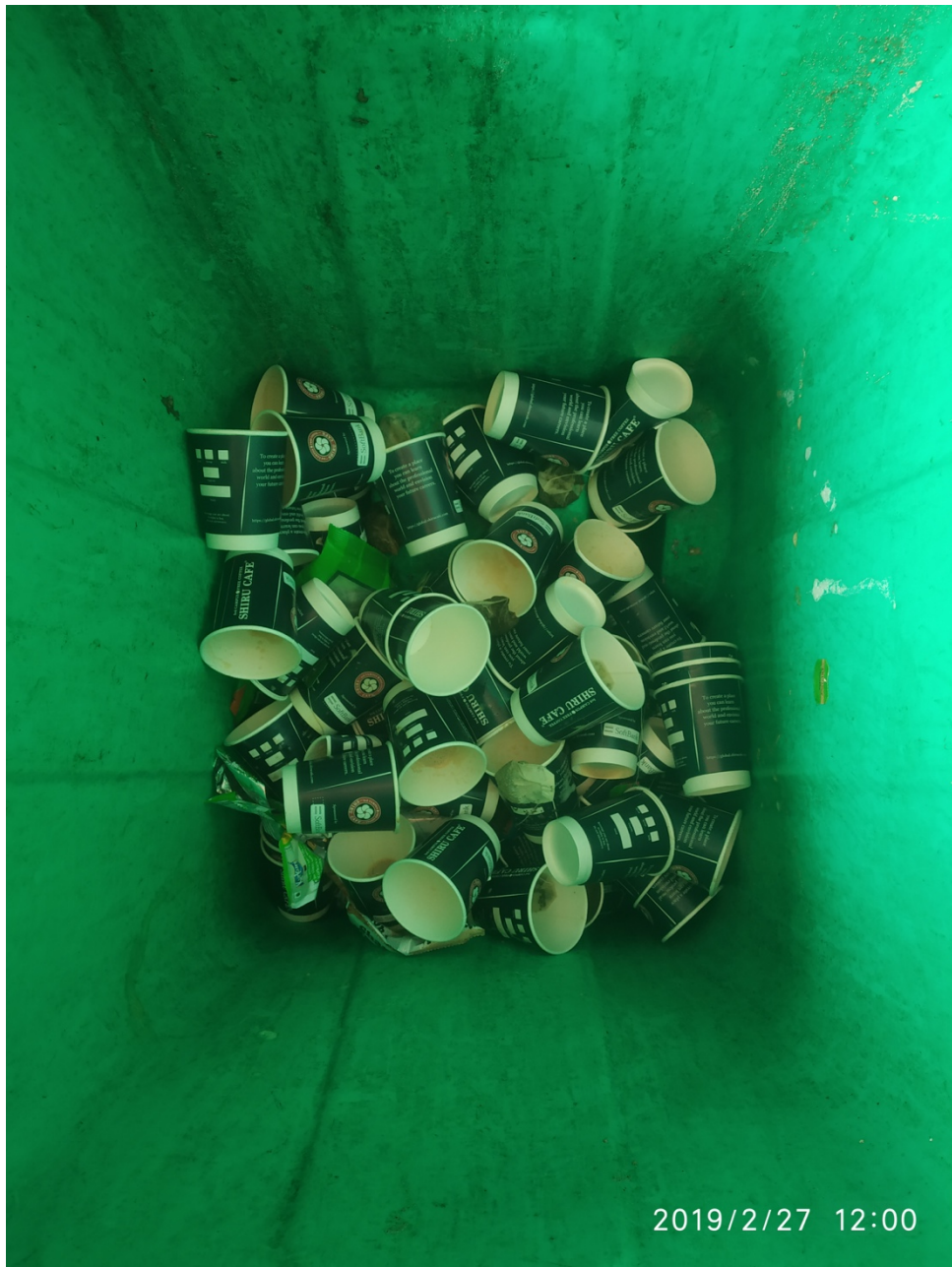


Fig1 16in Shirucafe dustbin

Sugar Intakes in various form of drinks in the between studies in our campus

After a few days of clicking session, I printed the first set of images in postcard size. Then I was trying to understand if there is any pattern in the whole process of photography. In this process, I started finding the similarities between the photos which I have clicked. So after my first session of photography, I ended up with almost 500 photos. From which I selected around 100 photos, and

there I started segregating these photos in different images in different groups or sets so when I was separating I found I can make two or three various iterations of groups.



Fig1 17Printed the first set of images



Fig1 18 Grouping the photos

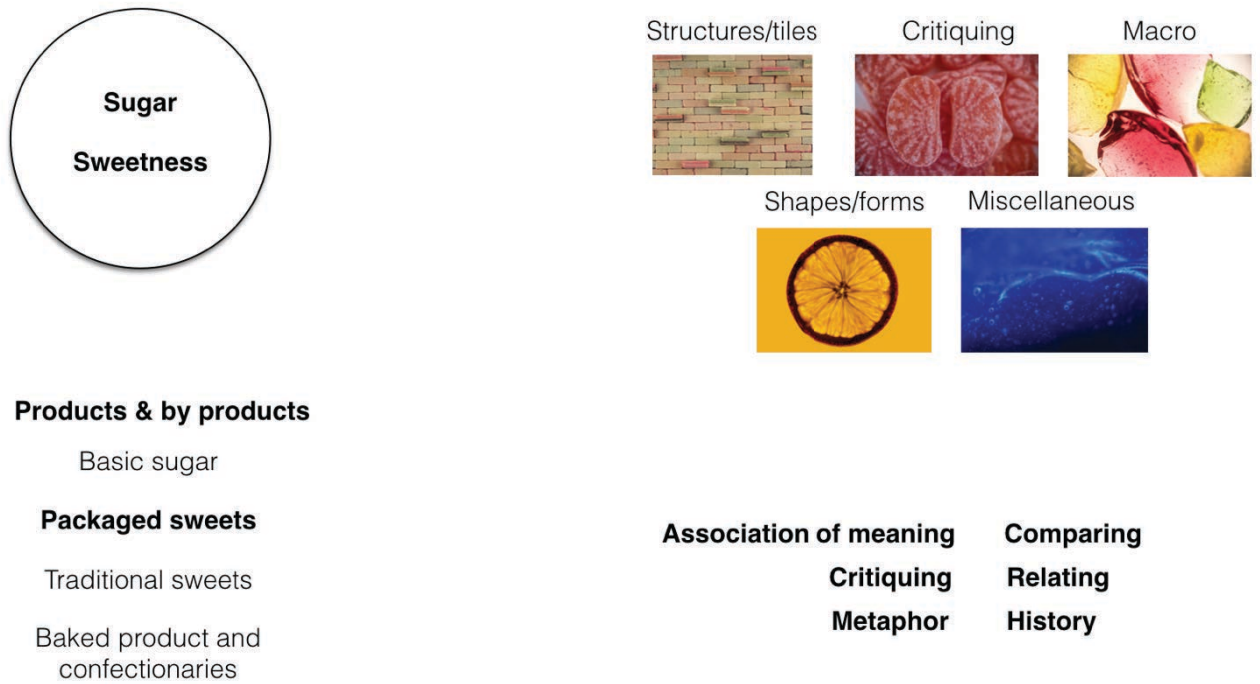


Fig1 19 Exploration of categories

2.5 Making Photo Series

There one can be the essential sugar, the packaged sugar and traditional sweets and baked product or confectionaries. Next, when I started again segregating, then I started finding The structures of sugar critiquing the sugar with their visual forms the Macro photographs shape and form shape and form and a miscellaneous category. I also started critiquing the sugar and its product or by-products by its packaging. The main ingredient inside or its textures forms shapes colours textures after that, I started finding the association of meaning with that visual forms. I started seeing a metaphor for the photographed sugar, so the sweetness and the last thing which I tried is to compare with the product or its by-product with the history of sugar or sweetness. During this whole process, it might be very time consuming, but the entire process of getting chocolates and sugar and by-products of sugar was exciting for me, and I started finding various insights while clicking my whole setup.

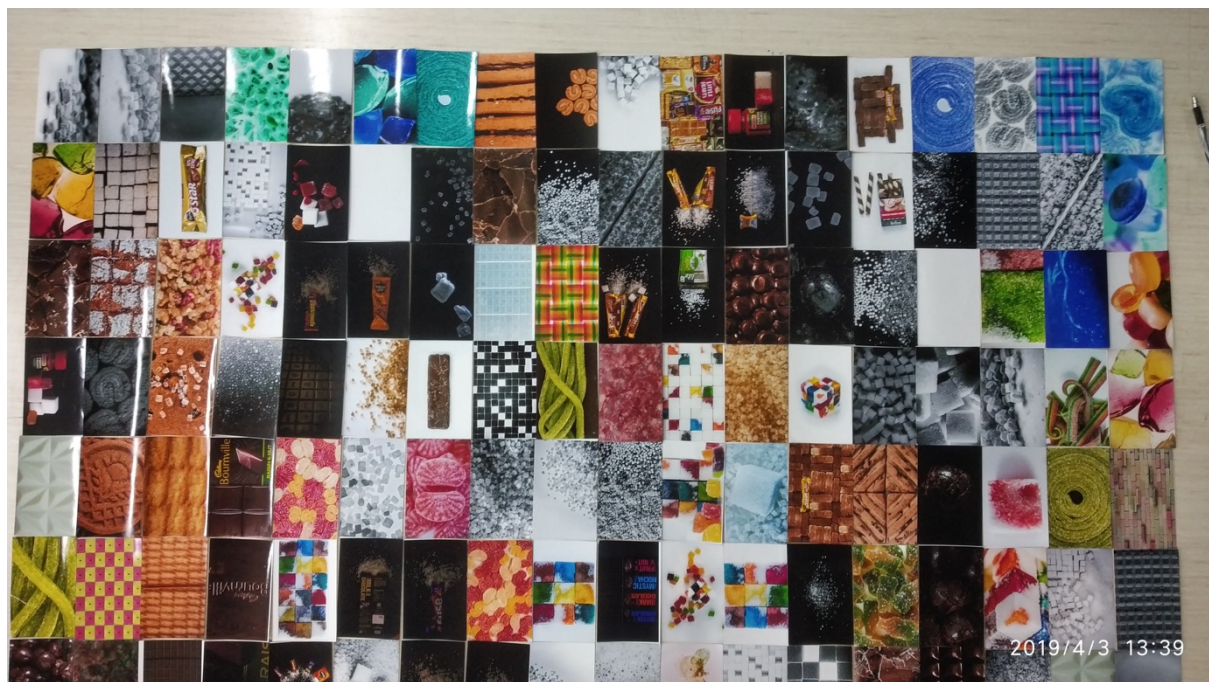


Fig1 20 second set of images

For this, photography was set in room 618, which was our classroom and my classrooms table, which is used as a conference table, have become my display for the chocolates. One table top where I have used black chart paper and white chart paper as a base for my photography, and a white translucent box as a white box as for diffusing light for clicking. After a few session, there was a time when where ever I visit, I started relating sugar and the history of sugar with various things which I can see around me. Again the I started clicking, and I clicked more images around more 200 images and segregated them I converted the inverted colour of pictures and tried to group

its and separate it different ways I started seeing how biscuits and bakeries Bakery products look like Bakery products look like.



Fig1 21 Exploration with sugar cube

I got sugar cube with me, three packets of a sugar cube and I open three packages. I making wall patterns out of it I tried backlit I tried front lit, and I tried backlit, and front lit both, and during this whole process of various photographic products in deep of my mind, I started also relating this by-product or sweets Sugars with architecture or construction or construction. Because of my strong architectural background, I started seeing similarities between the construction technique of by-products and products and products of sugar and the architecture I started seeing how textures and patterns have deep similarity between them. I found it very interesting how these colours are also similar. How are concrete is harmful to nature and sugar is detrimental to the body and how earth or soil is the primarily important thing and how the jaggery is the essential important thing both have the colour similarities as well as the functional contextual similarities in them. These made my interest in clicking not only the Macro photographic but also comparing the sugar products with architecture or construction products

2.6 Equipment : The equipment which are used are listed below



Figl 22 NIKON D750 CAMERA BODY



Figl 25 NIKON 50MM 1.8G LENS



Figl 23 NIKON LENS 40MM 2.8(CROP LENS)



Figl 26 LIGHT STANDS 2NO.



Figl 24 NIKON 105MM 2.8 LENS



Figl 27 WHITE UMBRELLA 2NO.

TRIGGER 1NO.



Figl 28 STUDIO LIGHTS 2NO.

ACRYLIC WHITE BOX 1NO.- 2FEET X 2 FEET X 2FEET



Figl 29 CAMERA TRIPOD 1NO.

Types of sugar

White

Brown

& Liquid

Sugar?

Sugars?

Added sugars?

(<https://www.sugar.org/sugar/sugars/>, 2019)

2.7 Working titles

There are

Sugarscapes

Sugar CAN

Cheeni

Sugar

Sugar portraits

Sugarchitecture

Sweetness and form

Sugar patters

Sugar architectures

Eatable visual forms of sugar/sweetness

Sugar and eatable visual forms/patterns/shapes



Fig1 30 types of biscuits



Fig1 31 Amul dark chocolates



Fig1 32 wafers in form of building

These are wafers staked in the forms of building. The wafers have different colors which are of different flavors



Fig1 33 candies

This candy is named as chupachup . When I see these candies, I felt about the colorful tape wars which are said to the effects of over eating of added sugar.

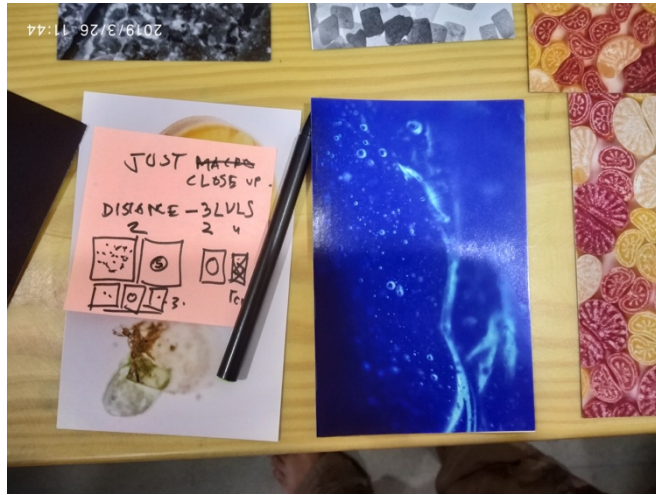


Fig1 34 segregating groups and rectifying 1



Fig1 35 segregating groups and rectifying 2

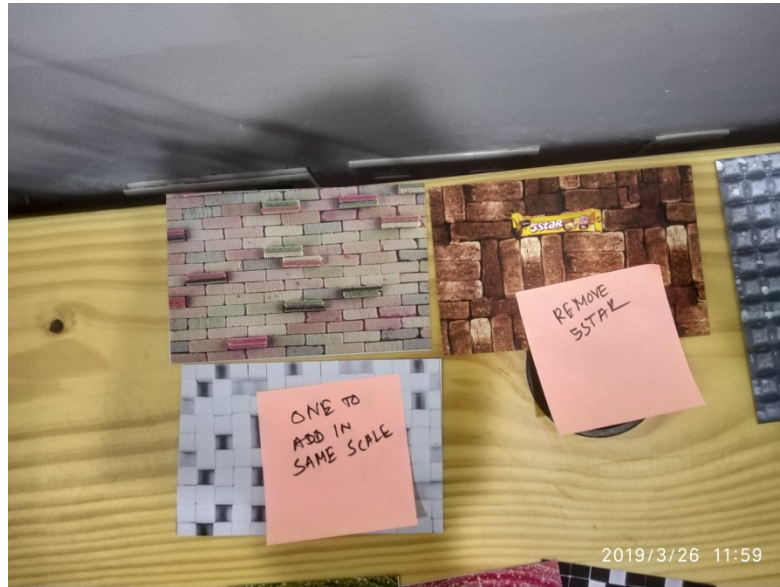


Fig1 36 segregating groups and rectifying 3



Fig1 37 segregating groups and rectifying 4

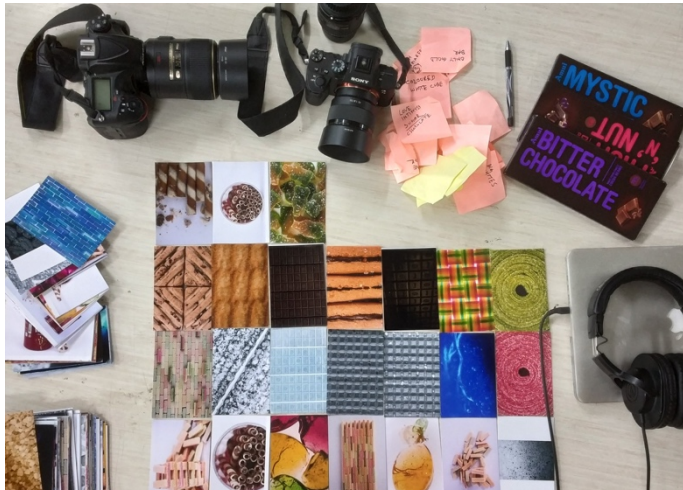


Fig1 38work space



Fig1 39print sample for review 3(5 star and soil)



Fig1 40 print sample for review 3(sugar macro)



Fig1 41review 3 display board



Fig1 42sweet colour in space

2.8 Exhibition space and photo framing

In this project, I have taken around 2500 different type of photographs which includes various type of sugars it's by-products added sugar chocolate etc. During this process, after the segregation and photography images, I started deciding on what will be my final output in terms of the project. I was thinking whether I am going to make it photobook out of it or out of it or I am going to do a photo exhibition. After my discussion with my faculty guide, we decided 2 to show the final outputs as an exhibition of diptych images so the final output would be set of pictures of two or three or three different series. Now I started printing the images which I have clicked I have clicked in different sizes and different type of papers so that I can decide upon which type of people will be final for the exhibition and what will be the proper size. During this process, I also had to finalise what would be the size and how I want to frame the images to exhibit. So I printed the photographs in various sizes and various papers sizes like A3, A3+,12x18 etc. I was also during this period deciding upon what would be the finish of the paper, so after many interrelations I finalised open Epson enhance matte finalised Epson enhance matte to be the final paper where I will print my exhibition photos and the final size I decided as A3. After that, I tried few iterations of making photo frames with MDF and wood I started making it with four-sided wooden piece support and base as MDF board which will work the best for the for the for the photo. During this period, I also was looking for a proper space to exhibit my final project. After many visits in the buildings in the academic zone, I finalised the basement area of B Block which is a semi-open semi which is a semi-open semi open space and a courtyard with sitting arrangements and concrete walls on three sides. I fell in love in love with this concrete RAW or finished walls. I finalised that space for my final exhibition.



Fig1 43plywood for frames



Fig1 44sample print small size



Fig1 45 using waste material for print



Fig1 46 Sample print bigger size

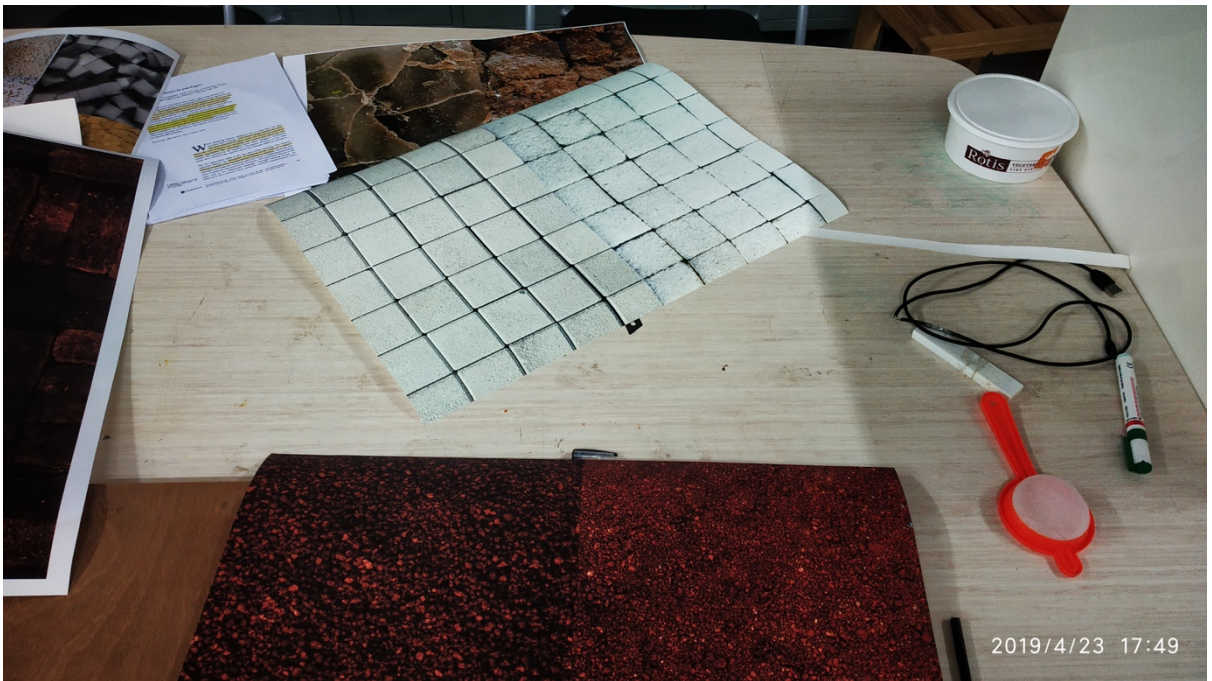


Fig1 47 sample print bigger size 2



Fig1 48 sample prints in different sizes



Fig1 49 photo framing



Fig1 50



Fig1 51



Fig1 52 print of 6ft size



Fig1 53 work space



Fig1 54 Sample prints



Fig1 55 Prints as soil

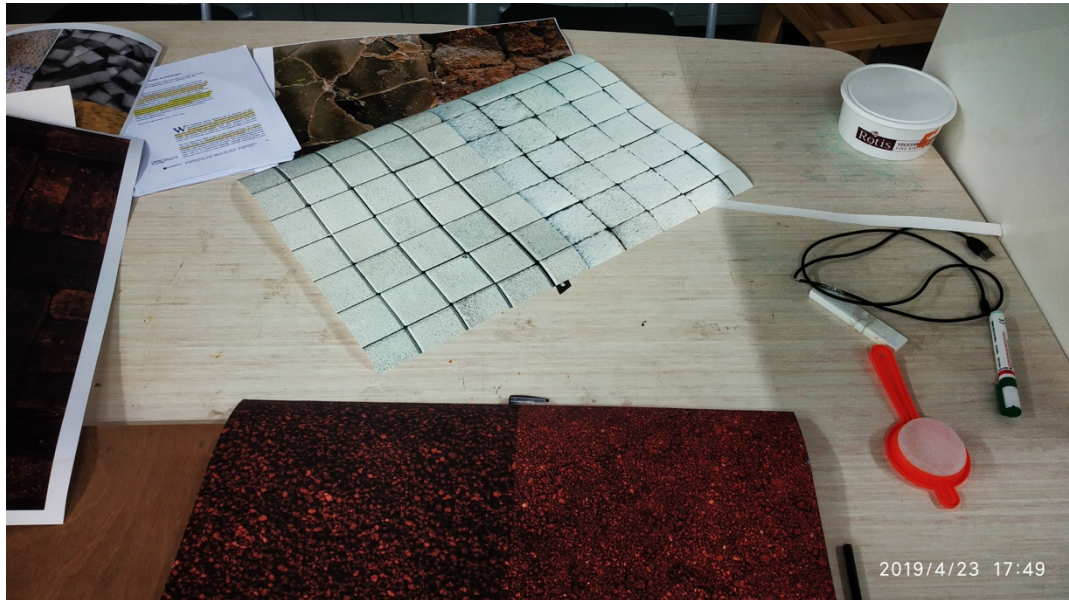


Fig1 56



Fig1 57



Fig1 58 Sample prints spread



Fig1 59 Making of frames in Departmental workshop

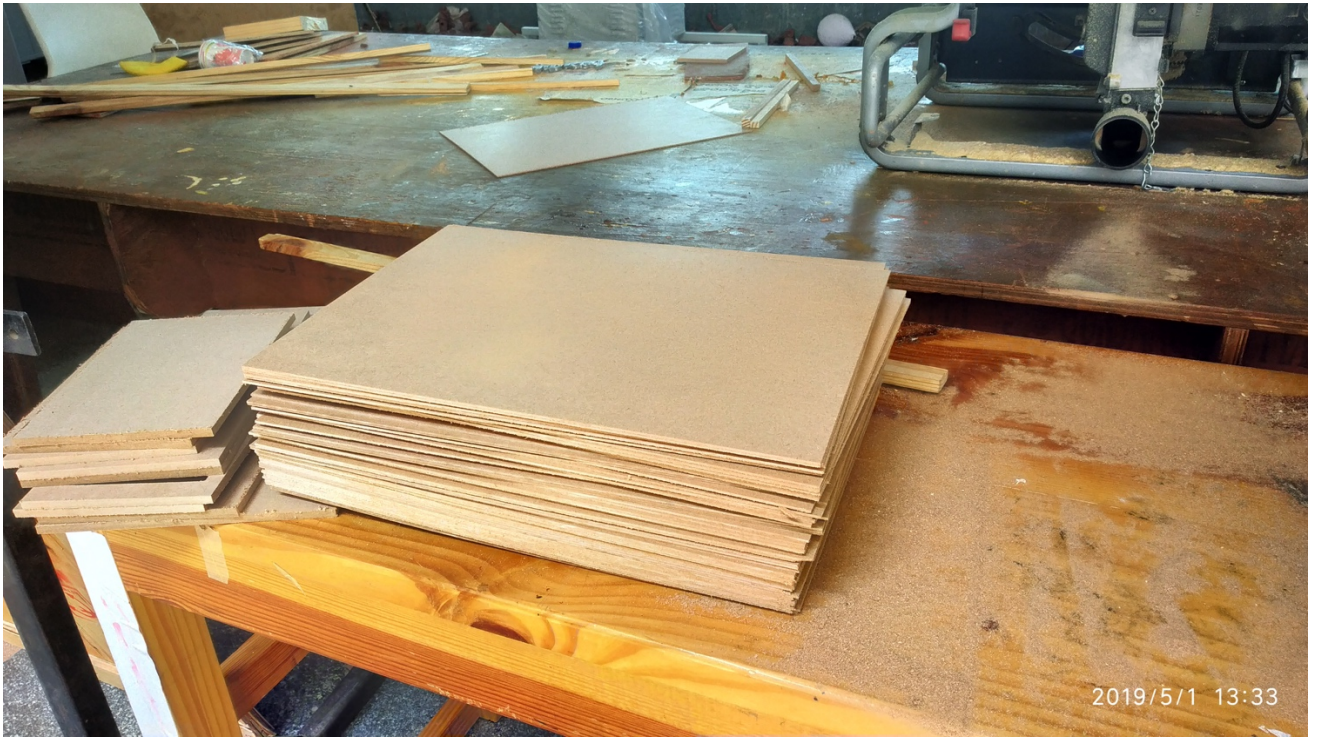


Fig1 60 6mm MDF cut in A3 size pieces



Fig1 61 6 mm mdf cut into A3 size with cutting machine



Fig1 62 Wooden members for frame backing



Fig1 63 Wooden pieces cut into frames



Fig1 64 sticking the wooden pieces with glue gun with MDF



Fig1 65 Stacking of frames



Fig1 66 Academic block B for exhibition Side 1



Fig1 67 Academic block B for exhibition Side 2



Fig1 68 Academic block B for exhibition Side 3



Fig1 69 Academic block B for exhibition Side 4



Fig1 70 Academic block B for exhibition human scale



Fig1 71 Academic block B for exhibition courtyard sitting space



Fig1 72 Printing in Departmental Printer



Fig1 73Cutting big print into small pieces



Fig1 74 Display in the classroom 618



Fig1 75 Making the final frames ready



Fig1 76 Workspace

2.9 Exploration



Fig1 77



Fig1 80



Fig1 78

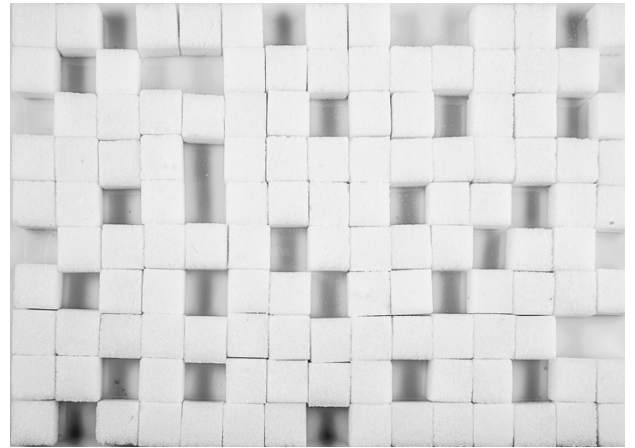


Fig1 81



Fig1 79

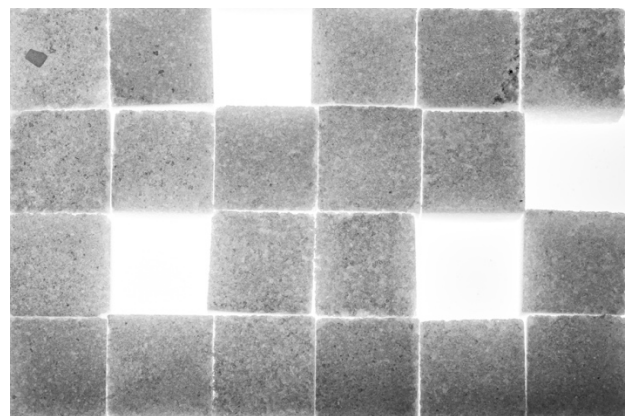


Fig1 82

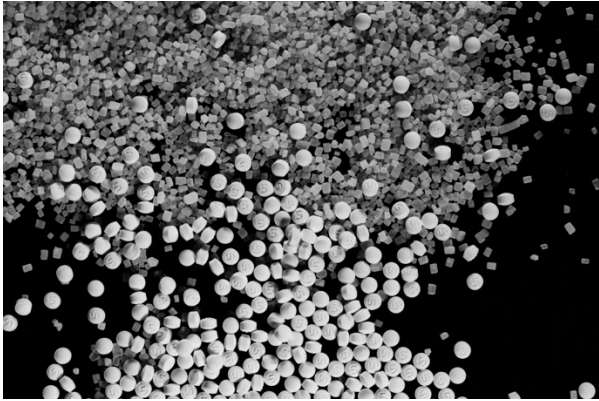


Fig1 83



Fig1 86



Fig1 84



Fig1 87



Fig1 85



Fig1 88

Scales

This diptych series of photographs are an exploration of Ideas where I have tried to show so how visual pattern and textures have a Deep Impact according to their scales. In this exploration, why have to explain how sugar and its products have tasted. Surfaces which not only shows the visual texture but also have an impact when someone is eating those products these textures and patterns are primarily designed in a certain way that the consumers will feel like not stop eating. These visual textures also so have a deep contextual and conceptual reasons behind it. The scales in which we see a particular sugar or sweet, and when we see it from a very close review, the impression in our mind changes about the product and the feeling of readability of the product.



Fig1 89



Fig1 90

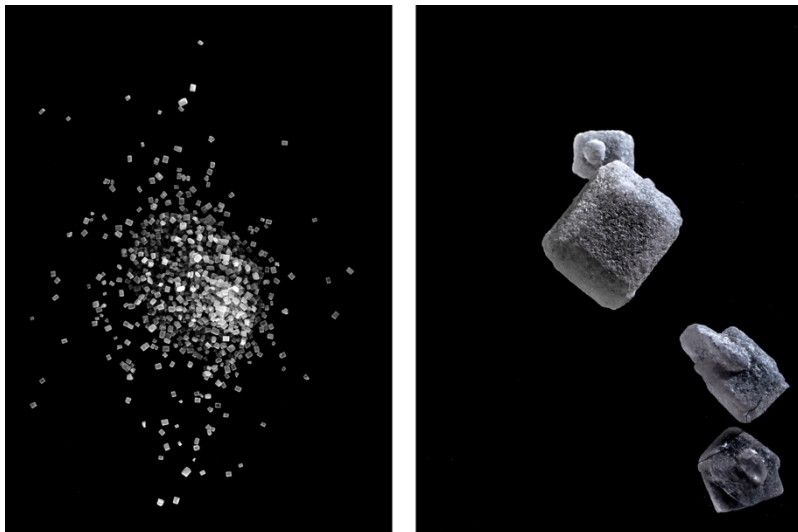


Fig1 91

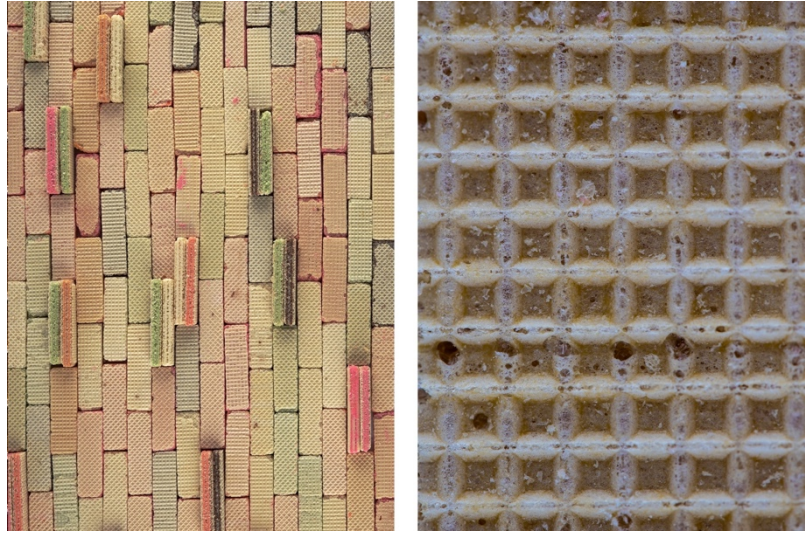


Fig1 92

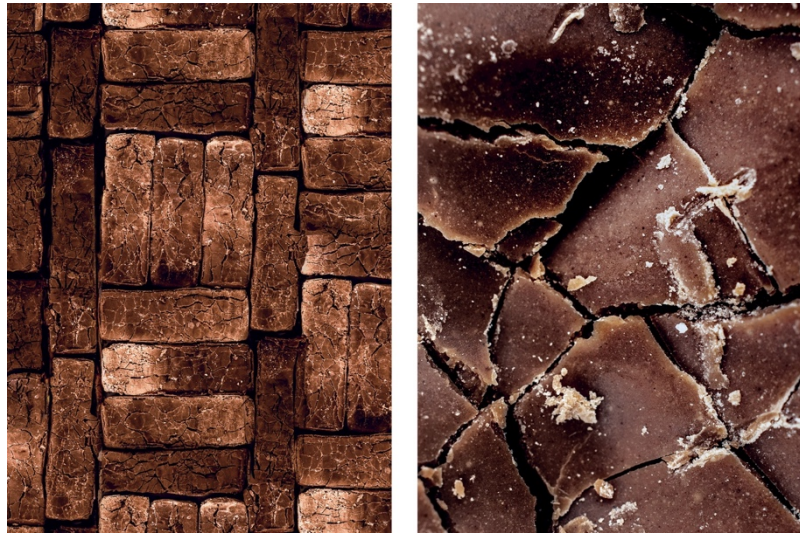


Fig1 93



Fig1 94



Fig1 95

Construction

This series of diptych photographs are to understand the difference and relation between the construction and the materials between architecture and sugar how these and sugar how these materials and construction techniques have similarity and difference and have a conceptual and contextual similarity in between them. The reason behind making this series is not only showing the pattern or texture but also the color similarities and understanding the deeper meanings behind the artificial and reality of various aspects in these two.

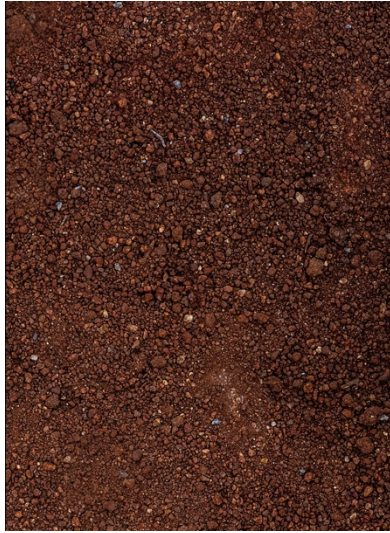


Fig1 96



Fig1 97



Fig1 98

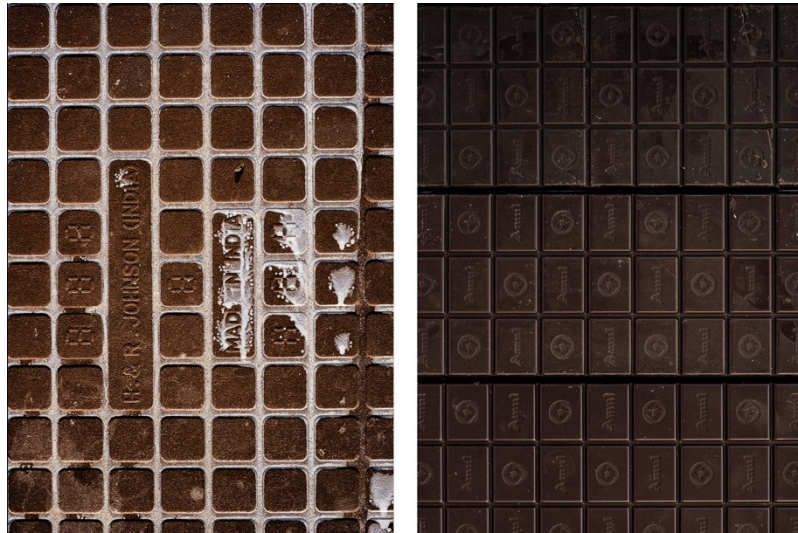


Fig1 99

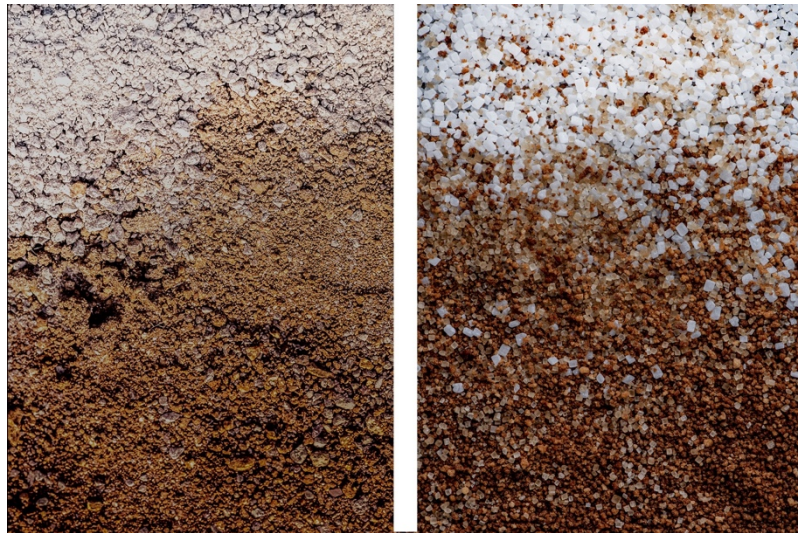


Fig1 100

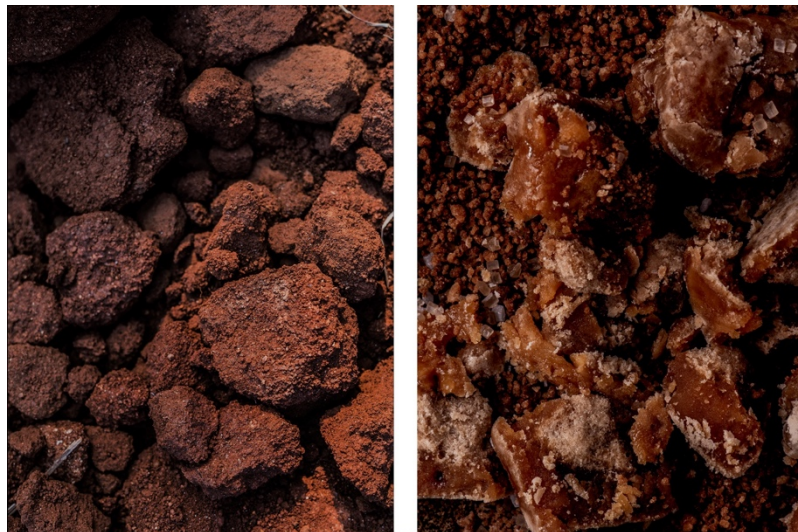


Fig1 101

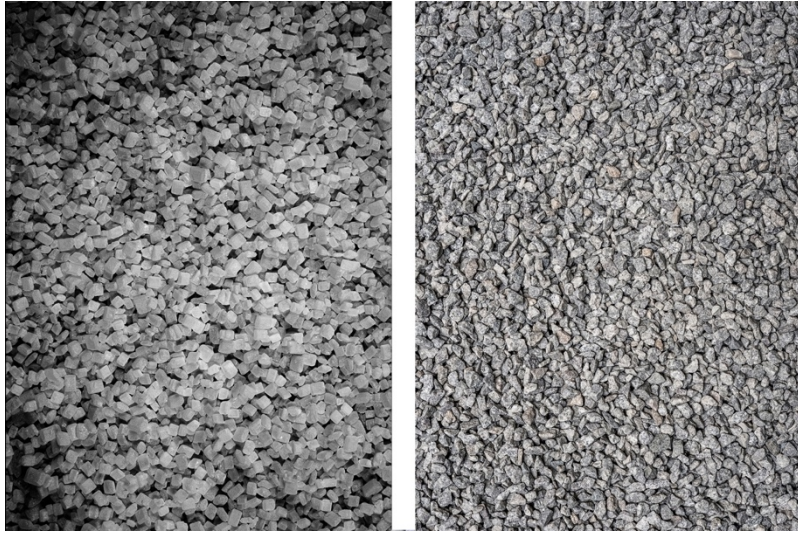


Fig1 102

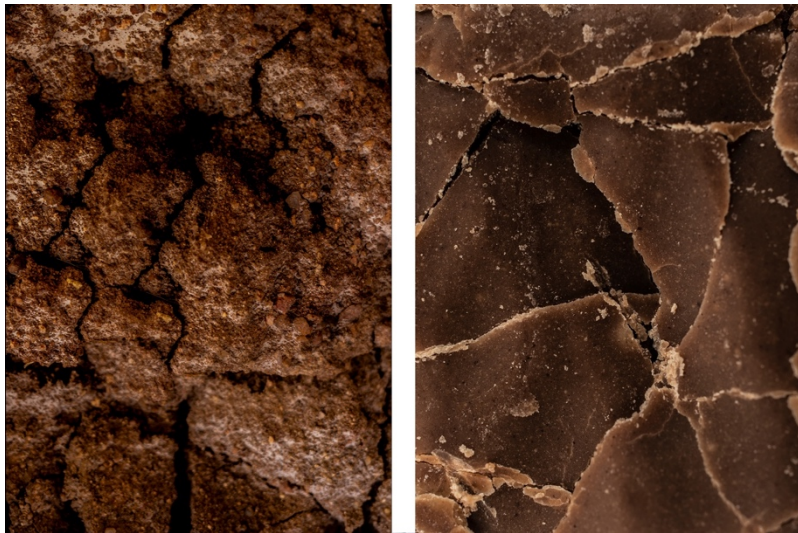


Fig1 103



Fig1 104

Slabs

These set of images shows how are was a trend at a time to make grid in slab of sweets which are to be sold. So that it can help the buyer as well as seller to understand the quantity and one grid used to be one unit with a certain wait and price which is seen in the villages till date .but how that usability have become a part of trend and aesthetics.



Fig1 105



Fig1 106



Fig1 107

Social Aspects

In this set of photographs, I have tried the social and economic aspect of our society. In this series, the images a drawing to you criticize the way various types of sugar is sold. And also show about the untold truth behind this product and their marketing techniques. In this series, I have also tried to address the addiction part, which is related is related to sugar and which is very much untold to us.



Fig1 108all cholates look same



Fig1 109 bottled up

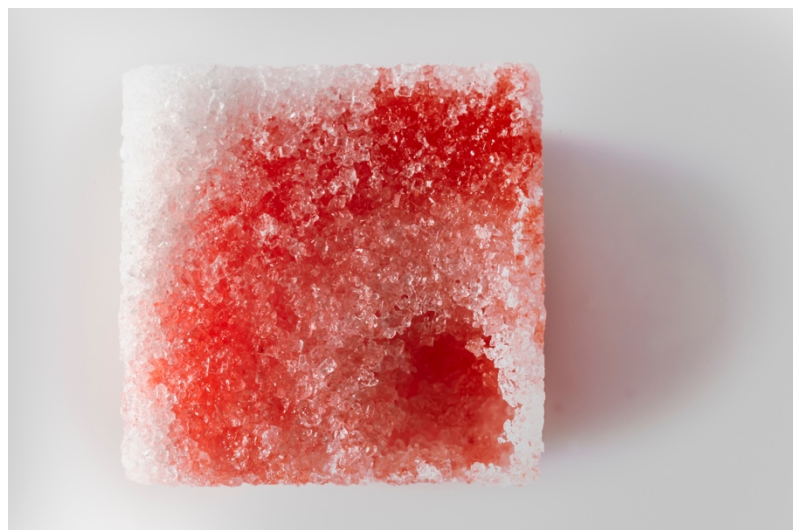


Fig1 110sugar as veg and non veg



Fig1 111coloured masonry



Fig1 112sugarflow



Fig1 113sugarate



Fig1 114golden used in packaging and sugar



Fig1 115sugar sophisticated form 5 star

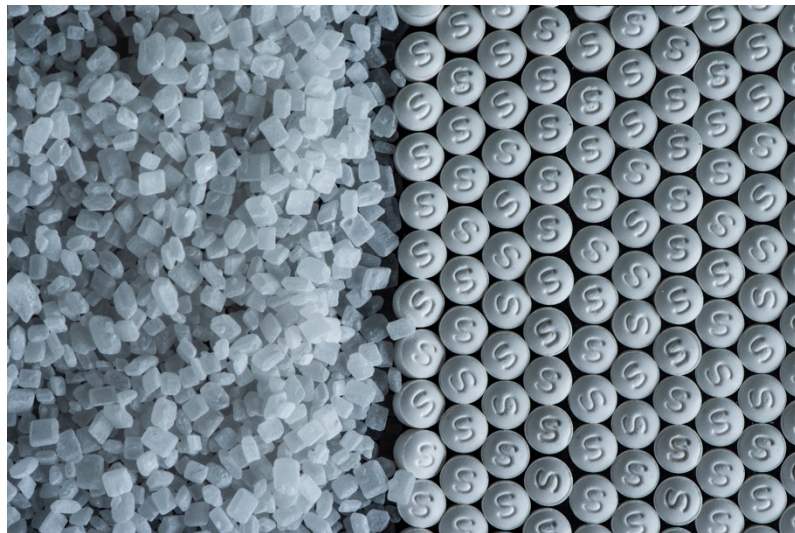


Fig1 116sugar and sugar free cause and effect



Fig1 117drug as brown sugar addiction

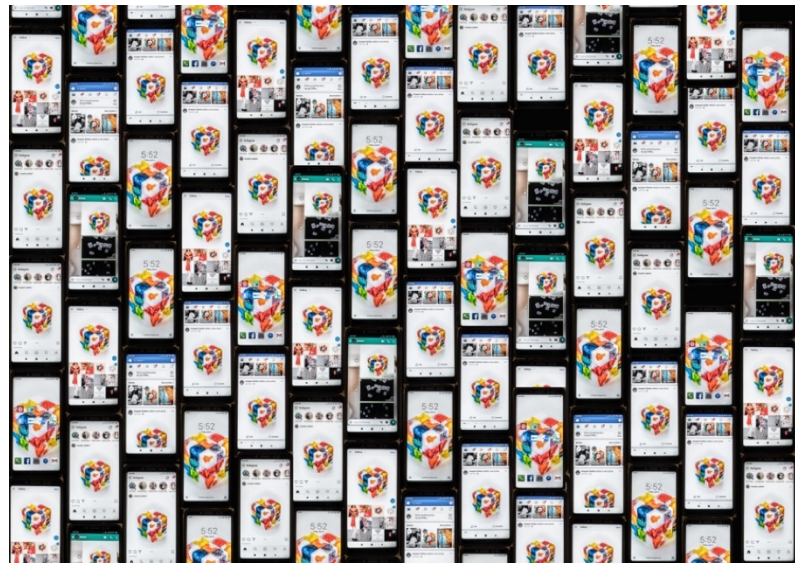


Fig1 118Addiction of sugar and mobile

Conclusion

This project has not only opened up my mind and broaden the horizon in terms of understanding contextual and conceptual ideas as well as enhanced my photography skills and knowledge. It helped me understand various aspects of sugar and sweets in India and around the world along with its history. It made me realise that architecture is deeply related to sugar. Another aspect of doing this project was to understand visual form, shape and patterns; it helped me understand the visual patterns and its impact, and how people from different backgrounds and culture produce as well as buy sugar, and that both are interrelated in a variety of context.

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