



BLUE IDEALS

Overcoming Artisan Challenges to the use of Natural Indigo

Charlotte Kwon, Tim McLaughlin, Pankaj Shah
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Overcoming Artisan Challenges to the use of Natural indigo

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This presentation was a joint talk by the three authors listed above as part of Indigo Sutra 2017 held in Kolkata India. The speakers each presented the text as indicated.

[Charllotte Kwon]

INTRODUCTION

Thanks to Amrita Mukerji for starting this journey. And thanks Jenny Balfour Paul for keeping us on the journey. And thanks deeply to Ruby Ghuznavi for inspiring so many of us so very long ago that the journey was worth taking. Thanks to all those who have worked tirelessly behind the scenes to make Indigo Sutra happen.

Welcome to everyone. We have three people on stage, here's why.

My name is Charllotte Kwon - I have practical experience working with indigo vats. I also have considerable experience working with artisan groups helping to bring their work to the world market.

Tim McLaughlin has a background in chemistry and philosophy of science and has been working on understanding the complex reactions that take place inside the indigo vat. This information has proved very useful in identifying good organic substitutes for the ingredients used to build a vat. I have worked together with Tim as co-director of 4 documentary videos and co-author of a recent Thames & Hudson publication on Banjara embroidery.

Pankaj has a background in artisan development and he has a keen understanding of the many challenges facing artisans and artisan groups. He is a co-founder of Qasab in Kutch, he is formerly of Khamir (which he also co-founded). For over twenty years Pankaj, along with his wife Meena, has been a facilitator and artisan liaison for Maiwa Handprints working with traditional tribal communities in Kutch and Central and Southern India.

The three of us have worked together for a very long time. We have committed our lives to working with artisans and natural dye farmers and to understanding their challenges - and their desire to reach markets.

In addition to running my business Maiwa, I also teach the use of natural dyes. Through this teaching I build and maintain natural indigo vats for use by 16 students in a week-long workshop. I do this twice a year. In addition I oversee the maintenance of production vats for both cellulose and protein yarns.

In my opinion, building and maintaining the vats for students is a bit more tricky than for production dyes. Students have not perfected the technique of dyeing - usually they add

too much oxygen while dyeing, and they occasionally collapse a vat through dying a cloth which has not been prepared properly. Reviving vats under these conditions has taught me many skills. I have learned a great deal about how far vats can be pushed and what can be done to keep them alive.

In this conference we would like to focus on natural indigo use by artisan dyers and small-scale growers in India.

NATURAL INDIGO

Natural indigo has the potential to become the centre of a network of artisan and dye-grower relationships. Many regions of India (especially Bengal) have the perfect conditions to grow high-quality *indigofera tinctoria* which, when processed, will yield an exceptionally good proportion of indigotin (the active component of indigo dye).

This capacity represents a natural resource which was heavily exploited with disastrous results during colonial times. Today, the hope is to encourage a revival of natural indigo growing, extraction and use, to empower small-scale artisan communities.

TYPES OF INDIGO - TYPES OF INDIGO VATS

We want to draw a clear distinction between the indigo dyestuff as either natural or synthetic.

The vat used in the dyeing process is either a chemical vat or an organic vat. A chemical vat uses sodium hydrosulphite or thiourea dioxide as a reducing agent. An organic vat uses a natural reducing agent which we will explain in a moment.

Clearly there are three possibilities of interest:

1. Use synthetic indigo in a chemical vat
2. Use natural indigo in a chemical vat
3. Use natural indigo in an organic vat

There is no dispute that using natural indigo in an organic vat would be best. Let's look at how an indigo vat works.

[Tim McLaughlin]

We are indebted to Michel Garcia for his clear explanation of indigo vats as having three distinct components. All indigo vats, regardless of how they are made need three things.

1. Indigo dye
2. A reducing agent
3. A base

Let's look at these:

The Indigo dye contains indigotin - the active component of indigo. Indigotin does not dissolve in water. It behaves like a very fine sand. If we want to dye with it we need to dissolve the indigotin.

The reducing agent is what we add to the vat to dissolve the indigotin.

BUT - the reducing agent will only be effective in a basic environment - so we must also add a base to the vat.

All indigo vats contain these three parts: Indigo, a reducing agent, and a base.

Indigotin: indigotin is dissolved into a yellowy-green solution. Cloth or yarns are placed into that solution. The dissolved indigo known as leuco-indigo or indigo white permeates the fibres. When they are taken out, the oxygen in the air turns the indigo back into its insoluble (blue) form.

The raw ingredients of chemical vats are dangerous and require careful handling. The disposal of the remains of a chemical vat can be a pollution problem. An organic vat can be made by replacing the chemicals, with organic matter and selecting an appropriate base.

The recommended base is Calcium Hydroxide - known as calx or lime. When the vat is exhausted the calcium hydroxide can be converted to Calcium Carbonate - which is just chalk. This is accomplished by whipping air into the vat.

A large number of possibilities exist for organic reducing agents, after all, indigo dyeing has been done by artisans for thousands of years - for most of this time artisans had no access to chemical supply stores. Sugars, fruits, sweet vegetables, even spent dye matter such as madder or henna can be used.

These organic vats all have different personalities and require a certain sensitivity on the part of the artisan. In return for cultivating this sensitivity, the artisan works in a much more healthy environment and keeps the workplace free from hazardous materials.

Moving to an organic vat, however, represents a challenge to artisans in terms of knowledge and experience. So we suggest an incremental change. First - replacing synthetic indigo with natural indigo, that is, indigo which has been extracted from plants. Second, once this transition is established, replacing the chemical vat with a natural vat, one of the vats that uses sugars or organic matter to accomplish the reduction.

The spent organic vat is a compost containing plant matter, indigo pigment and chalk. And it can be easily be thrown away as a nitrogen and calcium-rich compost.

Let's look at the switch from using synthetic indigo to using natural indigo extracted from the indigo plant.

[Charlotte Kwon]

The goal of reviving natural indigo and getting artisans to switch from synthetic to natural indigo presents a number of challenges to both growers and artisans.

I purchase natural indigo for Maiwa. Recently I was shocked when artisans told me that there was no natural indigo left - Maiwa has purchased it all! I asked myself “How can this be so?” Maiwa does not purchase THAT MUCH indigo. The number of artisans claiming to use natural indigo, and the number of large companies which claim to support traditional techniques, require a far greater volume of dyestuff than Maiwa could ever use.

So I asked myself “How is this possible?” It seemed that it could only be possible if artisans or merchants that say they are using natural indigo are not using natural indigo. Either they are being sold synthetic indigo and being told it is natural. Or they are receiving a blend of synthetic and natural.

We want to present these issues here, because this audience represents possibly the most knowledgeable and active indigo community in the world, This conference takes place at the centre of what was once the best land to grow indigo in the world. If these problems are solvable this is the place and the time to solve them.

[PANKAJ SHAH]

I would like to look at the issue of indigo use from the artisan’s perspective. What challenges face artisans in the use of natural indigo? We have broken this question down into five points:

FIVE CHALLENGES FACING ARTISANS:

1. Technical Challenges: Dyeing skills needed to produce quality results with natural indigo.
2. Design Challenges: Creating products using natural indigo.
3. Sourcing Challenges: Availability of natural indigo on regular basis at consistent prices.
4. Costing Challenges: Setting prices for natural indigo products.
5. Marketing Challenges: Competition and market position for artisan products.

Let’s explore these.

1. Technical Challenges:
Dyeing Skills Needed to
Produce Quality Results
with Natural Indigo



1. TECHNICAL CHALLENGES: DYEING SKILLS NEEDED TO PRODUCE QUALITY RESULTS WITH NATURAL INDIGO.

[CHARLOTTE KWON]

Fortunately this challenge can be overcome. A skilled indigo dyer who already knows how to use synthetic indigo should have little difficulty in transitioning to natural indigo.

The use of natural indigo and organic vats needs to be demystified to help those who are not confident. There are many myths about indigo, which have kept artisans from using natural indigo dyeing or making an organic vat.

Natural Indigo behaves differently in the vat than synthetic indigo. Synthetic indigo is strong and immediate. For an artisan to get the same depth of shade from natural Indigo multiple dips are necessary. A deep colour in the block printing process is difficult because the physical resist, dabu mud, for example, weakens when dipped repeatedly. In ikat, bleed is more likely when a skein of tied yarns are repeatedly immersed.

Conversely a light clear shade can be more difficult with synthetic Indigo but may be obtained with ease when working with natural. In fact, a single dip that produces a deep shade raises suspicion that an artisan is not working with natural indigo.

Organic vats also behave differently than chemical vats. Chemical vats are quicker to make but often have a shorter life than organic vats.

The Organic vat often works best when a gentle heat is applied from time to time. There are some low-tech options for providing the heat needed to revive a vat – such as immersion heaters (many of which now have small solar panels). I will be teaching the technique of building and maintaining vats in our “Vat Mechanic” workshop.

Timelines and work schedules may need to be adjusted for the use of natural vats.

A chemical vat can be prepared in a few hours. A vat based on fructose may take about 24 hours to reach its best. Vats based on sweet fruits and vegetables or henna may take two to three days to reach optimal dyeing strength. Fermentation vats may take a week or longer to establish themselves based on size of the vat and process used.

If work falls off or there is down-time in the studio, craftspeople need to know how to put a vat to sleep and wake it up, that is, how to maintain vats during dormant times.

Natural vats need to be adjusted to meet different craft methods. Techniques such as Ajrakh, Dabu, Kalamkari, Bandhani, Shibori, Plain fabric dyeing, yarn dyeing etc. all bring their own requirements. The skilled dyer knows this and can adjust the vat to meet these requirements.

However - the synthetic indigo with the chemical vat has de-skilled artisans and it s a myth that it is very difficult to learn the process of working with natural indigo. As Tim mentioned - we highly recommend that artisans first learn to work with natural indigo (rather than Synthetic indigo) using a chemical or hydros vat. Get confident with that. Then work alongside these vats with a small vat made with natural indigo and various organic agents. Explore what is cheaply and easily available in your local area. Once you are confident, scale up to larger production vats for your process.





2. Design Challenges: Creating Products Using Natural Indigo

2. DESIGN CHALLENGES: CREATING PRODUCTS USING NATURAL INDIGO.

[TIM MCLAUGHLIN]

It is necessary to educate the public about how indigo behaves on a textile. After final washing indigo dyed textiles should not show rub off on a white cloth with a light rubbing. But there is long term rub-off and wear. The public does not necessarily connect the love of textiles they already know — like faded blue jeans — to the behavior of indigo dye on a shawl or jacket.

More specifically, it is necessary to design products that take advantage of the unique character of natural Indigo.

Actually, indigo is in a privileged position. Few dyes or fabrics could lay claim to the wealth of traditions that indigo can. It has been used wherever it grows. It is used throughout Asia, and through trade it arrived in Europe. Indigo clothing traditions span all classes. Indigo can be used on prestige textiles and on “blue collar” textiles. Historic uses are everywhere. It is simply a matter of tapping into these rich traditions in an authentic way. Innovation, modification and incorporation of traditional cloth into contemporary products is the next logical step





3. Sourcing Challenges:
Availability of Natural
Indigo on a Regular Basis at
Consistent Prices

**3. SOURCING CHALLENGES:
AVAILABILITY OF NATURAL INDIGO ON REGULAR BASIS AT CONSISTENT PRICES.**

[CHARLOTTE KWON]

Artisans may find it difficult to obtain a supply of natural indigo. Prices may not be stable throughout the year — Indigo prices are tied to the success of the crop and so depend on each season.

Additional challenges to small-scale artisans purchasing from extractors include:

Knowledge of purity of the natural indigo. Usually a skilled dyer would have to make a test vat and dye a familiar cloth. Ideally, this takes place before a large amount of indigo is purchased.

Deception is possible, however, this is an age-old problem of trade (the old bait and switch) and there are no qualities of natural indigo which make it either more or less problematic than any other raw material being used in a production process.

Natural Indigo suppliers are saying they do not have enough clients. Their main sales are powdered leaf indigo for hair dye - not extracted indigo for dyers.





4. Costing Challenges:
Setting Prices for
Natural Indigo Products

4.COSTING CHALLENGES: SETTING PRICES FOR NATURAL INDIGO PRODUCTS.

[Pankaj Shah]

Generally speaking, effective costing requires the experience of one full production run of product. Small-scale producers require training in flexible costing strategies. Strategies that can take into account real costs of training, infrastructure, and materials. More importantly the models used for costing need to be appropriate for small-scale artisan producers who often use family members in production. Costing models based on factory production are worse than no costing models, as such models will dictate how small scale craft “should” be organized.

Here are some figures for costs:

Using Natural indigo is more expensive than synthetic indigo, however, using natural indigo in an organic vat can be less expensive than synthetic indigo in a chemical vat if the vat is in constant production.

Artisans should be able to offer clients a schedule of options with pricing. If the artisans knows confidently how to build all types of vats then they can offer the client synthetic indigo with a chemical vat or natural indigo with a chemical vat or natural indigo with an organic vat. It is in the hands of the clients: what they wish to pay for, what they wish to say on their label, how they choose to market, and if they wish to be truthful.



5. Marketing Challenges:
Competition and Market
Position for Artisan Products
featuring Natural Indigo

5. MARKETING CHALLENGES: COMPETITION AND MARKET POSITION FOR ARTISAN PRODUCTS FEATURING NATURAL INDIGO.

Charllotte has proposed that producers establish labeling whereby the process is announced to the buying public:

“Only natural indigo extracted from plants was used to dye this item.”

“This item was dyed with natural indigo using an organic vat technique.”



We would like to see the market reinforce the use of natural indigo. If an artisan is dyeing with natural indigo, the client should be able to visit the artisan and see the work going on. The client needs to pay the proper rate for natural indigo. The use of natural indigo can be marketed to the buying public as a value added step - in the same way the use of natural dyes and organic cotton are marketed as value-added steps.

These are the 5 challenges facing artisans when they consider using natural indigo.

To conclude we would like to correct some false assumptions about the use of natural indigo. These often come up when we talk to artisans and dyers and ask them why they are using synthetic indigo and not natural indigo.

OBJECTION #1 THE NATURAL INDIGO VAT IS TOO DIFFICULT TO MAKE.

[CHARLOTTE KWON]

Although natural vats can be temperamental, with experience there is no reason that the artisan dyer cannot have the same success with natural vat as they have with the chemical vat. Many chemical vats can be built very quickly - but they also are exhausted quickly.

A natural indigo vat is like other artisan processes such as the manufacture of cheese or curd.

The manufacture of curd is a fermentation process which has the same sensitivity to

temperature, pH and starting ingredients as a natural indigo vat.

In fact, the perfection of technique gained through working with a natural organic indigo vat can lead to artisans being able to manage very fine fabrics like pashmina and fine wools and silks that can be weakened and compromised in the synthetic/hydros vat.

OBJECTION #2. PRODUCTION DYERS SAY- OUR LARGE, DEEP INDIGO VATS CONTAIN UP TO 3 KILOS OF INDIGO - IT IS TOO MUCH OF A RISK TO ATTEMPT AN ORGANIC VAT.

[TIM MCLAUGHLIN]

Established artisans who are concerned about managing a larger vat should begin with smaller vat and use these to become familiar with the process. We have had very satisfying experiences working alongside traditional dyers. Often there is an “ah-hah” moment, an epiphany, when they master the vat. At this stage they are reluctant to return to a chemical vat. It IS an investment to make a large deep vat. Yes. But it a rewarding investment.

OBJECTION #3. USING ITEMS LIKE DATES FOR AN INDIGO VAT WOULD TAKE FOOD OUT OF THE MOUTHS OF ARTISAN FAMILIES.

[PANKAJ SHAH]

This is an interesting argument which calls up the ghosts of famine and the troubled history of indigo in Bengal. However, it does not reflect the truth of working with organic vats. If dates are expensive or needed for food, a variety of other materials can be used. It is never the case that people need to go hungry in order to feed an indigo vat.

Moreover, fruits may be used for an indigo vat that are not suitable for eating. Items such as over-ripe bananas and over-ripe mangos.

In addition, unusual items such as madder or henna which has already been used for dyeing can be used. In some parts of India henna is inexpensive and readily available because of mehndi - and henna is a fabulous reducing agent.

Moreover, artisans always need to purchase raw materials for their craft. This is always the case. It is only because some of the raw materials for an organic vat are also foods that the confusion arises. But for an organic indigo vat there are many many choices and they do not have to compete or have impact on the local markets for foods.

[TIM MCLAUGHLIN]

The criteria for reducing agents is really rather simple. For fruits and vegetables they must have a lot of single sugars (monosaccharides). Either glucose or fructose. Chemically

speaking, the aldehyde functional group on these molecules makes them reducing sugars. The sugar molecules are only useful when they are not in a ring form. For this reason sucrose will NOT work. Sucrose is one molecule of fructose and one molecule of glucose linked together in ring formation — so that this sugar will not work as a reducing agent.

Even jaggery will work - because even though it has a high percentage of sucrose, it also has a high percentage of fructose and glucose.

The other quality that fruits and vegetables must have is that they must NOT be acidic. Acidic fruits like apples, pineapples, or the pulps of oranges and other citrus fruits will not work. The acids in these fruits will collapse the vat. However, sometimes the citrus peels will work. Sugar beets and sweet onions will also work.

The real test of what will work is in making a working indigo vat.

CONCLUSION

{CHARLOTTE KWON}

What Maiwa brings to the table with our participation in Indigo Sutra 2017 is a deep desire to get farmers in India growing natural dyes. As the market becomes more enthusiastic for natural colour, as we educate more people towards “slow clothes”, as consumers become prepared for the expense; the extra care required, and the beauty of cloth coloured with natural dyes, there is a real opportunity for artisans and farmers to work together to create new networks.

The networks are everything. Artisans need to be able to find a vital, value-added market for environmentally friendly processes to preserve the cleanliness of their local water and land.

All we need to get started is some artisans who are prepared to start dyeing with natural indigo and some farmers who are prepared to grow that indigo and sell it to the artisans.