

A Pattern Is Not Just a Pattern

What Minangkabau Songket Can Teach Artificial Intelligence About Meaning

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A machine can make a pattern in seconds.

Ask a generative model for a textile inspired by West Sumatra: gold threads, repeating diamonds, sharp triangles, curling leaves. Ask again and the geometry becomes more intricate. Again, and it begins to look old enough to have a history.

It may be beautiful.

It may also mean nothing.

That distinction has been on my mind because of songket from Pandai Sikek, a Minangkabau weaving tradition in West Sumatra. Songket Pandai Sikek is recognised in Indonesia's national inventory of intangible cultural heritage. At first glance, it seems unusually compatible with machines. Its surface is structured by repetition. Shapes return at measured intervals. Lines reflect, translate and repeat. Diamonds meet triangles; motifs grow out of other motifs. Research on its ethnomathematics has identified rhombi, isosceles triangles, similarity, congruence, symmetry, comparison, measurement and counting in its patterns and making.

An algorithm can find structure too. Perhaps faster than I can.

But a pattern is not just a pattern.

Consider pucuak rabuang, the bamboo-shoot motif. To a vision model it may become a configuration of angles, edges and repeated shapes. To a designer it may become an attractive form that can be stretched, recoloured or multiplied. To mathematics it can offer symmetry, transformation and proportion.

Within Minangkabau thought, however, the bamboo shoot does not stop at its outline. A familiar interpretation is ketek baguno, gadang tapakai: useful when small, useful when grown. The young shoot can be eaten; mature bamboo can still serve the community. The motif therefore carries more than visual information. It carries an expectation about a life: growth should lead not merely to size or strength, but to continuing usefulness.

The geometry can be copied. The obligation cannot.

This is where artificial intelligence creates an uncomfortable problem for culture. Generative systems are becoming extraordinarily good at the visible grammar of things. Give them enough examples and they can learn how forms tend to follow other forms, which colours belong beside each other, which curves look plausible and which combinations resemble a tradition.

In that sense, AI can learn the syntax of a motif.

But syntax is not memory.

A woven form exists inside relationships that are harder to convert into pixels: between an older weaver and a younger learner; between cloth and ceremony; between a motif and a proverb; between observation of nature and customary teaching; between the person wearing the cloth and the community capable of reading it.

The World Intellectual Property Organization uses the term traditional cultural expressions for forms such as designs, symbols, handicrafts, narratives and other expressions that form part of a community's identity and heritage and are passed from generation to generation. The language matters because it reveals something the word pattern can hide. A traditional motif is not simply a decorative arrangement in the public world. It can carry skill, identity, values and belief.

Transmission is different from replication.

Replication asks: Can the form continue?

Transmission asks: Can the meaning continue with it?

Artificial intelligence may become astonishingly good at the first question while making the second much easier to forget.

I come to this tension through mathematics education. Songket is an almost irresistible bridge between abstract geometry and lived culture. A learner can trace a line of symmetry, compare proportions, identify transformations and study repetition in a cloth that belongs to a recognisable cultural world. It can make mathematics feel less imported and more situated.

But there is also a danger in that sentence.

If I photograph a motif, extract its triangles, turn them into a worksheet and call the exercise ethnomathematics, I may have preserved the mathematics while discarding much of what made the object cultural in the first place. I could reduce pucuak rabuang to a triangle. A generative model could perform the same reduction at industrial scale.

The issue is therefore larger than whether machines can 'understand' culture in some philosophical sense. The more practical question is what humans choose to preserve when machines make cultural form infinitely reproducible.

Digitisation has a paradox. The more successfully a cultural expression is photographed, catalogued and placed online, the easier it becomes to preserve, study and transmit. But the same accessibility can make it easier to detach a form from the people, practices and obligations that gave it meaning.

A motif once transmitted through people can become a file. A file can become data. Data can become style. Style can become a prompt.

Generate a luxury textile in traditional Minangkabau style.

A few seconds later, the machine responds.

No malicious act is required. No one needs to intend cultural erasure. Decontextualisation can happen simply because generative systems are very good at recognising what repeats, and culture contains repetition everywhere.

Yet repetition is not what makes tradition alive.

The same motif can be woven thousands of times and still be renewed because each act of weaving happens inside a human chain: someone learned it, someone remembers why it is used, someone decides where it belongs, someone corrects an error, someone tells the story again. UNESCO describes living heritage as something continually recreated by its bearers and sustained through the transmission of knowledge and skills from person to person and generation to generation.

Meaning is not an invisible substance hidden inside the threads. It is the relationship surrounding them.

This is why I do not think the answer is to keep artificial intelligence away from cultural heritage. That would be both unrealistic and unnecessarily fearful.

UNESCO's recent work on AI and living heritage points in both directions at once: AI can help document, safeguard and share cultural practices, while also forcing difficult questions about who creates, curates, interprets and commodifies cultural material. The technology is therefore neither a saviour nor a thief by default. It is an amplifier of human choices.

A model used with care could help young people explore the geometry of songket, compare motifs, organise archives or discover patterns that encourage them to learn directly from weavers. The same technological capacity could also flood marketplaces with endless 'Minangkabau-inspired' designs detached from Minangkabau people.

The difference does not lie in the machine alone. It lies in the human choices around it.

Perhaps this is where we should look for the human contribution in AI-assisted creation. Not in proving that our hands can draw more accurately than machines. Not in defending some shrinking territory called human creativity until technology eventually crosses its border.

The more useful distinction may be responsibility.

A machine can generate ten thousand variations of a bamboo-shoot motif. A human being must decide whether variation is appropriate.

A machine can identify similarity. A human being can ask whether similarity has become appropriation.

A machine can reproduce a visual form. A human being can name its source.

A machine can optimise an image for attention. A human being can decide that attention is not the only value worth optimising.

WIPO has long noted that traditional cultural expressions sit awkwardly within conventional intellectual-property systems. Textiles, designs and symbols can be deeply

connected to community history and identity, yet outside use may occur without the consent of traditional owners or custodians. AI does not create this problem, but it changes its scale and speed. What once required a skilled imitator can increasingly be approximated by anyone with access to a model.

That should change the ethics of prompting.

Imagine asking an AI to create a songket-inspired design. Instead of beginning with 'make this style,' the creative process could begin with questions.

Where does this motif come from? What does it communicate? Which parts may be transformed freely? Which elements should remain connected to their cultural context? Who should be credited? Who should benefit? Could the generated work lead a viewer back to the living tradition rather than replace it?

Those questions may slow generation down.

That is precisely why they matter.

Artificial intelligence gives us unprecedented abundance of form. What it does not automatically produce is restraint.

And restraint may become one of the most important human creative acts.

The Minangkabau expression *alam takambang jadi guru* is often rendered as nature becoming a teacher. Songket motifs emerge from looking at plants, animals, movement and the surrounding world, then transforming observation into form and form into teaching. The point is not that nature supplies a library of images waiting to be copied. The point is that a person learns how to attend.

This is not merely image generation. It is a chain:

world -> attention -> interpretation -> form -> meaning -> transmission

Generative AI enters that chain at a strange point. It can absorb enormous quantities of existing form and produce new form with almost no delay.

But if we allow the chain to collapse into:

form -> more form -> more form

something essential disappears.

Not because the machine failed. Because we stopped asking what the pattern was for.

Perhaps *pucuak rabuang* offers an answer.

The bamboo shoot matters not because it repeats itself perfectly. It matters because becoming larger is accompanied by becoming useful.

Technology should face the same test.

AI will become faster. Its images will become more convincing. Its imitations of cultural styles will become increasingly difficult to distinguish from work made through human hands. The question is not whether we can stop that growth. The better question is what the growth will be useful for.

A machine can learn the geometry of a tradition. It can reproduce its surfaces and invent plausible variations. It may even show us patterns that no human weaver has made before.

But meaning does not appear merely because a pattern is complicated enough.

Meaning begins when someone becomes answerable for the pattern: where it came from, why it was made, what it carries, who has the right to transform it, and where it is going next.

That responsibility cannot be generated after the image as a caption. It has to be part of the act of making.

A pattern is not just a pattern.

And perhaps being human, after all, is not simply our ability to create one.

It is our ability to know that.

Cultural and Research Sources

This creative essay is not an academic paper, but the factual references to Pandai Sikek songket, its mathematical features, pucuk rabuang, traditional cultural expressions and living-heritage transmission were checked against the following sources.

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