

APPLYING DIGITAL TECHNOLOGY IN EXPOSING AND REINTRODUCING A FORGOTTEN SPICE PLANT

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Abstract

Many people in Yogyakarta like to eat *nasi rawon*, *brongkos* rice, or *konro* soup, whose main spice is *kluwak*. *Kluwak* is the seed content of the *pucung* tree fruit (*pangium edule reinw*), which is fermented to convert the cyanide content of the seeds into a safely edible spice. The results of observations and interviews state that many people in Yogyakarta (as a research area) no longer know the existence of the *pucung* trees at all, even though the fruit and *kluwak* are written in the *Book of Wulang Reh* and *Wulang Sunu* written by King Paku Buwana IV; written on the Javanese *tembang* 'Bapak Pucung.' The number and existence of *pucung* trees in Yogyakarta are increasingly rare and forgotten. If left in its current state, the *pucung* tree will become extinct. That was why the creative idea of researching and making a graphic novel about this spice tree emerged. The author collaborated with Aznar Zacky, Yohannes Jatmiko Yuwono, and Viyantoro Giri Saputa to present this graphic novel for publication and socialization. The goal is for the wider community to recognize black gold (*kluwak*), care for and preserve this species, and cultivate its natural products smartly and ecologically.

Keywords: *pucung*, *kluwak*, graphic novel unflattening, *brongkos*

Abstrak

Banyak orang suka makan nasi rawon, nasi brongkos, atau sop konro yang bumbu utamanya *kluwak*. *Kluwak* adalah isi biji dari buah pohon *pucung* (*pangium edule reinw*) yang difermentasi guna mengubah kandungan sianida isi biji *pucung* jadi bumbu yang aman dikonsumsi. Hasil pengamatan dan wawancara menyatakan bahwa banyak orang di Yogyakarta (sebagai wilayah penelitian) sudah tidak tahu sama sekali eksistensi pohon *pucung*, walaupun buah dan *kluwak* tertulis dalam *Kitab Wulang Reh* dan *Wulang Sunu* yang ditulis oleh Raja Paku Buwana IV; tertulis pada *tembang* Jawa 'Bapak Pucung'. Jumlah dan keberadaan pohon *pucung* semakin langka dan terlupakan. Jika dibiarkan dalam keadaan seperti sekarang ini, pohon *pucung* akan punah. Karena itulah ide kreatif melakukan riset dan pembuatan novel grafik tentang pohon rempah ini muncul. Penulis berkerjasama dengan Aznar Zacky, Y. Jatmiko Yuwono, dan Viyantoro Giri Saputa menghadirkan novel grafik ini untuk dipublikasi dan disosialisasi. Tujuannya adalah agar masyarakat luas mengenali kembali emas hitam (*kluwak*); peduli merawat dan melestarikan spesies ini; dan membudidayakan hasil alam melalui pohon ini secara cerdas dan ekologis.

Keywords: *pucung*, *kluwak*, graphic novel unflattening, *brongkos*

A. Introduction

Nowadays, almost everyone actively working or studying in schools or colleges is focused on various systems, equipment, and ways of life related to increasingly

sophisticated, complex, changeable, and ambiguous technology. Funds, time, and attention are focused on and gathering around the problem of internet-based digital technology.

On the other hand, organic, natural, and manual life often escapes public attention. Modern life and modernization have made humans avoid nature, flora, and fauna. The existence of plants – living beings that provide oxygen to humans and fellow creatures – is far from the attention of people today, including Generation Alpha and Generation Z.

In our city, most people ignore the existence and sustainability of trees that shade the environment, provide produce for humans, and support the sustainability of the environmental ecosystem. The pucung tree, also known as pangium edule, is a species that significantly benefits human life and the environment. Its fruit is not only used as a spice for various legendary dishes but also as a preservative spice for foodstuffs and Natural Dessert Ingredients. Once abundant in our research area, this tree is now a rare and endangered species, a loss that would significantly impact our lives and the environment, demanding immediate attention and action.

We undertook a comprehensive study on the pucung tree to address this ecological issue. This involved a Thorough literature review, extensive on-site surveys, purposeful interviews with local experts, and detailed observations of the tree's visual features. We also made a field visit to a remote village in a mountainous area, where we met a farmer who demonstrated the process of converting pucung fruit seeds, which were previously toxic due to cyanide, into a preservative spice for foodstuffs and a detergent.

We transformed our insights about the tree, its crops, and the existence of the tree in the lives of our community into a graphic novel. We work together as a working team, whose members are Aznar Zacky - a conventional comic creator - Y. Jatmiko Yuwono, and Vidyantoro Giri Saputra as digital assistants.

In the process of making this graphic novel, we have more ideas to continue working with this model with other species, either spice or herbal plants, as subjects to be transformed or transfigure innovatively. Purpose – This research is to bring the pucung (pangium) tree - a neglected spice tree – to the attention of environmental art or eco-art studies. The fermented seed of the pucung tree, called kluwak, is the main spice of several kinds of ethnic cuisines in Indonesia, such as black soup (rawon, East Java), konro soup (South Sulawesi), brongkos (in Yogyakarta); other parts of the tree are

suitable for several purposes. Unfortunately, like many other spice and herb trees that are forgotten, this tree is no longer in the discourse of the community that uses it, at least in major cities in Indonesia. From interviews with many students from various regions of the country studying at the Indonesian Institute of the Arts Yogyakarta, it can be concluded that almost all of them do not know where the seeds come from, what kind of trees they are, and how they exist now. This species will likely become extinct due to the lack of recognition and preservation efforts. If the current situation is left unchecked, the ecological consequence is not only to local people but also to the world botany community.

B. The Aim

To create a graphic novel about the tree, its various usefulness, and its mystery to attract public attention to the existence of the tree itself in the world to generate public empathy for this species; therefore, many people get interested in recognizing, preserving, and cultivating the tree in ecological and intelligent ways, offering hope for its sustainability.

C. Methods

This paper utilizes the theory of multimodality, incorporating methods and techniques such as 1. Hunting the presence of trees in chosen areas in Yogyakarta to empirically observe the trees, documenting their components and environmental context; 2) Studying literature on the practical uses of products derived from this tree in daily life and gathering insights from people's responses when asked about the seed and the species' existence; 3) collaborating with a comic maker and one digital assistant to produce a graphic novel.

D. Findings

The pucung tree, with its unique components and potential uses, is a fascinating subject. The words 'buah pucung' and 'biji pucung' are significantly mentioned in a moral guidebook, *Serat Wulang Reh*, by Raja Paku Buwono IV at the end of the 19th century, and in the Javanese old song, the word 'pucung' is also mentioned. Some popular Javanese cuisines use spices from pucung fruit seeds called 'kluwak,' but ironically, most people in the research area no longer know their origin. The number of kluwak trees in the research

area is also quite rare, very far from what is known by parents who are still young. Almost all components of this tree are functional for practical needs, such as spices, herbal medicinal ingredients, and wood, which are suitable for various needs. Its continuity is threatened because most people take the seeds and even cut down this tree without considering rejuvenating it. If this situation is unchecked, this tree will become extinct in the research area, namely in Yogyakarta. Through in-depth observation and visual exploration, we can state that the distinctive and unique forms of the components of the pucung tree are either used as elements to be assembled or in images that can be used to represent anything.

E. Originality/value

To date, neither eco-art nor eco-design uses the pucung tree as an exclusive subject to explore and develop through graphic novel media. However, this graphic novel is not the end in itself; it is only the media for generating public eco-awareness that the trees are fellow living beings who have the right to live according to their nature and that the beauty of trees is when they are still alive for the world survival and the sustainability of the ecosystem of the living environment.



M DWI MARIANTO  AZNAR ZACKY



YOGYAKARTA, LIKE OTHER CITIES IN THE ARCHIPELAGO, FACES THE SAME ECOLOGICAL PROBLEMS, ONE OF WHICH IS THE DISAPPEARANCE OF LARGE TREES, SPICE VEGETATION, AND ENDEMIC SPECIES. THE CAUSES ARE MANY. TREES ARE STILL SEEN AS INANIMATE OBJECTS, EVEN AS SHADE. THEY ARE HAPHAZARDLY CUT DOWN, POISONED, OR MOWED DOWN. GREEN OPEN SPACES FOR TREE ROOTS ARE BECOMING SCARCE. DON'T KNOW THEM, DON'T LOVE THEM; THE DISAPPEARANCE OF RARE TREES IS 'COMMONPLACE'; IF THEY GO EXTINCT, 'SO WHAT?'

ONE OF THE ENDANGERED SPECIES IS THE PUCUNG TREE (*PANGIUM EDULE*), WHOSE SEEDS ARE MADE INTO KLUWAK BY FERMENTING THEM FOR 30 TO 40 DAYS. THE POISON IS USED AS A SPICE.

THE CONTENTS OF KLUWAK ARE USED AS THE MAIN SEASONING FOR VARIOUS ETHNIC DISHES, INCLUDING: BRONGKOS (YOGYAKARTA CUISINE), RAWON (EAST JAVA CUISINE), SOP KONRO (MAKASSAR CUISINE), AND GABUS PUCUNG (BETAWI CUISINE). THE CONTENT OF KLUWAK SERVES AS A FLAVORING, NATURAL PRESERVATIVE, AND DEODORIZER. THE SEEDS OF THE PUCUNG TREE CAN BE CALLED ONE OF THE FORGOTTEN SPICES IN INDONESIA, MANY PEOPLE DO NOT KNOW THE ORIGIN, EXISTENCE, AND EXISTENCE OF THE PANGIUM TREE. IN FACT, THIS TREE IS A MULTIPURPOSE TREE.

THE MAIN MESSAGE OF THIS GRAPHIC NOVEL IS TO EXPLAIN THE UNIQUENESS, USEFULNESS, AND IMPORTANCE OF THE PUCUNG TREE SO THAT MORE PEOPLE WILL KNOW, LOVE, PRESERVE, AND CULTIVATE THE OLD SPECIES CALLED PANGIUM TREE, A NATURAL SOURCE OF SPICES, WHOSE EXISTENCE IS NOW THREATENED WITH EXTINCTION. BECAUSE THE BEAUTY OF THE PUCUNG TREE IS NOT IN ITS EXTINCTION AND BECOMING A STORY, BUT IN ITS CONTINUATION TO BE MANAGED IN AN **ECO-ESTHETIC** WAY FOR THE GOOD OF ALL; HUMANS AND THE PUCUNG SPECIES AS PART OF THE UNIVERSE.



M Dwi Marianto



SINCE THE 8TH CENTURY, THE PEOPLE OF THE ARCHIPELAGO HAVE CONDUCTED CROSS TRADE BY BARTERING NATURAL RESOURCES AND HANDICRAFTS WITH FOREIGN LANDS SUCH AS CHAMPA, CHINA, GUJARAT.

THE ARCHIPELAGO IS KNOWN AS A LAND OF TENS OF THOUSANDS OF LARGE AND SMALL ISLANDS, VERY FERTILE IN PRODUCING VARIOUS KINDS OF HIGH QUALITY SPICES.

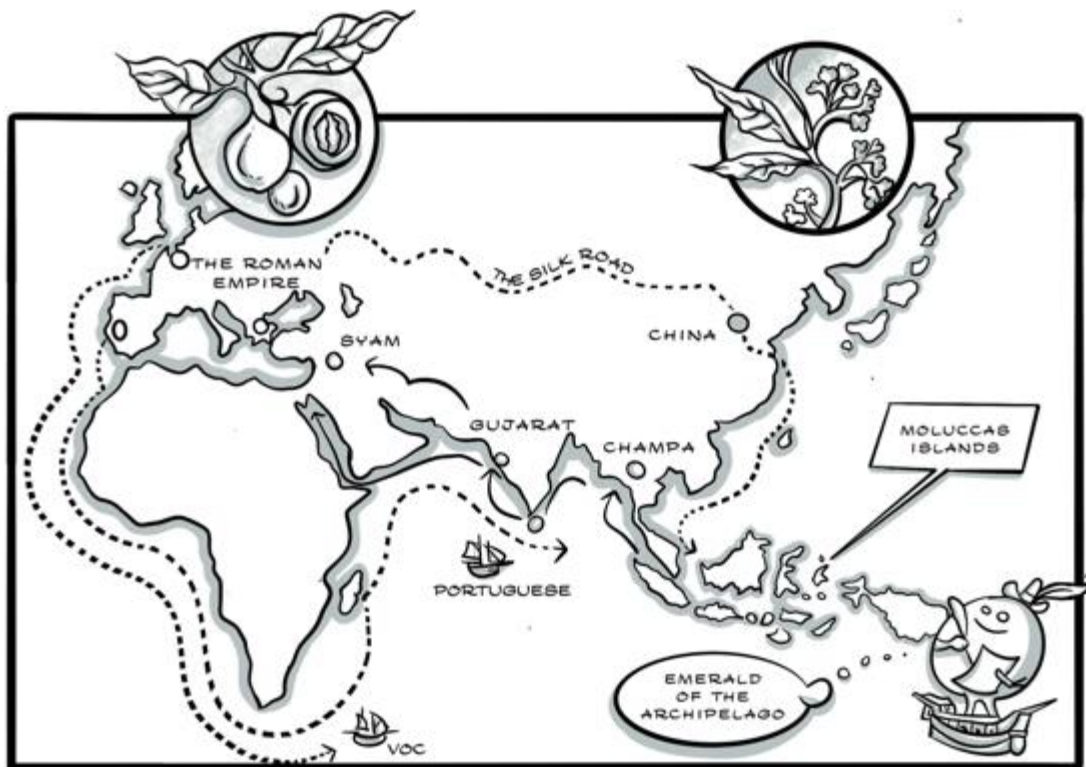
THE FLOW OF TRADE IS GETTING WIDER, GUJARATI TRADERS BROUGHT SPICES TO THE COUNTRY OF SYAM WHICH WAS THEN CONTINUED BY SYAM TRADERS TO BYZANTINE - THE VICTORIOUS EASTERN ROMAN EMPIRE AT THAT TIME.

WHEN THE SPICES OF THE ARCHIPELAGO REACHED EUROPE, THE LAND OF THE FOUR SEASONS, THEY BECAME THE MOST SOUGHT-AFTER AND NEEDED COMMODITIES. THEIR VALUE SOARED DUE TO THE LENGTH AND DISTANCE OF THE TRADE ROUTES.

THIS MADE THE PEOPLE OF EUROPE CURIOUS ABOUT 'WHAT COUNTRY DO THE SPICES ORIGINATED'.

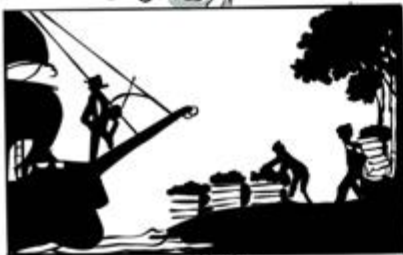
TRANSOCEANIC SHIPPING FLEET EXPEDITIONS AS PROOF OF THE RENAISSANCE CONCEPT, WERE CARRIED OUT BY MAGELHAENS, MARCOPOLO, AND COLUMBUS. THE FIRST TWO MADE IT TO THE ARCHIPELAGO.

MARCOPOLO'S NOTES READ 'THE EMERALD STRAND OF THE EQUATOR—A STUNNING, LUSH, PROSPEROUS LAND ON THE EQUATOR. THE PORTUGUESE FLEET IN THE MID 16TH CENTURY, FOLLOWED BY THE VOC FLEET, MARKED THE BEGINNING OF THEIR COLONIAL PERIOD.





BEFORE THE ARRIVAL OF THE PORTUGUESE AND VOC FLEETS, THE INDIGENOUS PEOPLE OF THE ARCHIPELAGO WERE SELF-SUFFICIENT—PROSPEROUS IN CULTIVATION—CULTIVATING ON THEIR OWN LAND, CUSTOMARY LAND, VILLAGE LAND.



THE VALUE OF THE ARCHIPELAGO'S SPICES IN THE EARLY GUJARAT - SHAM - BYZANTINE - EUROPEAN TRADE, WHICH LED TO THE ARRIVAL OF THE PORTUGUESE AND VOC FLEETS SAILING DIRECTLY FROM THEIR LANDS, LED TO VARIOUS ONGOING PROBLEMS IN THE ARCHIPELAGO.

COLONIALISM



INITIALLY THE PORTUGUESE AND THE VOC DID ORDINARY TRADE, BUT OVER TIME THEY INCREASINGLY CONTROLLED TRADE FLOWS, SPICES, REGIONS, WITH A PATTERN OF AGREEMENTS THAT WERE DETRIMENTAL TO THE NATIVES—MILITARY PRESSURE—DEVIDE ET IMPERA, AS WELL AS POWER OVER VILLAGE LAND—VAST INDIGENOUS CUSTOMARY LAND—PLUS TRIBUTE SYSTEMS FOR DEFEATED TRIBES OR KINGDOMS.



CULTIVATION SYSTEM

THE COLONIAL GRIP BECAME STRONGER WHEN THE VOC WENT BANKRUPT IN THE 18TH CENTURY, AND WAS REPLACED BY THE DUTCH EAST INDIES GOVERNOR'S ADMINISTRATION. NOT ONLY THE SPICES THAT HAD BEEN THE PRIMA DONNA IN THE PAST, SUCH AS NUTMEG, CLOVES, CINNAMON, ONIONS, PEPPER; IN THE FOLLOWING PERIOD, IT WIDENED TO NEW TYPES OF PRIMA DONNA CROPS, SUCH AS COFFEE, COCOA, TEA, AND SUGAR CANE.

STARTING IN 1830 GOVERNOR VAN DEN BOSCH IMPLEMENTED A SYSTEM OF FORCED CULTIVATION, BOTH ON THE PEOPLE'S PLANTATIONS, AS WELL AS ON THE LAND OF NEW TERRITORIES THAT HAD BEEN CAPTURED—CONTROLLED BY MILITARY FORCE.

THE NATIVES, CALLED INLANDERS, WERE COMPLETELY DEPRIVED OF THEIR FATE, LIFE AND DIGNITY IN THEIR OWN LAND. THE IMPACT WAS FELT UNTIL AFTER INDEPENDENCE: CHAOTIC IN TERMS OF CUSTOMARY LAND MANAGEMENT RIGHTS. ONE EXAMPLE IS PTPN 2 IN NORTH SUMATRA.



NUTMEG



CLOVE



LEMON
GRASS



GINGER



TURMERIC



TAMARIND



CINNAMON



GARLIC



PEPPER



BITTER
BEAN



MORINGA



CANDLE NUT



PANGIUM



CELERY



CHILI
PEPPER



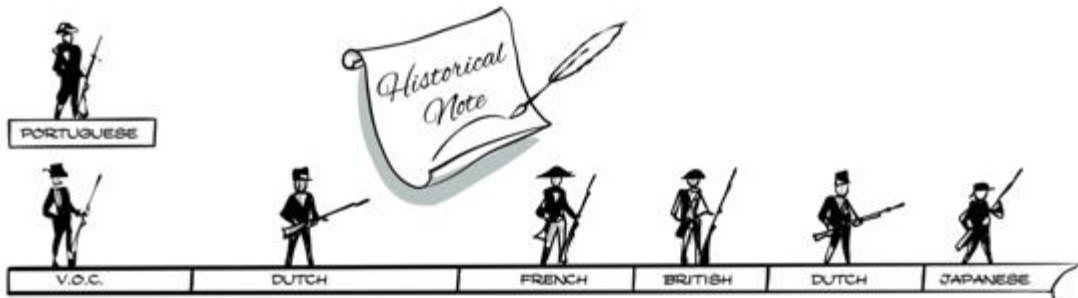
CORIANDER



GALANGAL



BAY LEAF



3 CENTURIES OF OPPRESSION H·VE RENDERED IT INCREASINGLY HELPLESS IN THE COLONI·L EXP·NSE OF 5 SUCCESSIVE N·TIONS. LIKE A "BROKEN THREAD" WITH EACH END SEPAR·TED BY DISTANCE ·ND TIME, BETWEEN THE PROSPEROUS PERIOD OF CULTIVATION ITSELF, THE PRE-COLONI·L PERIOD AND THE POST-INDEPENDENCE PERIOD.

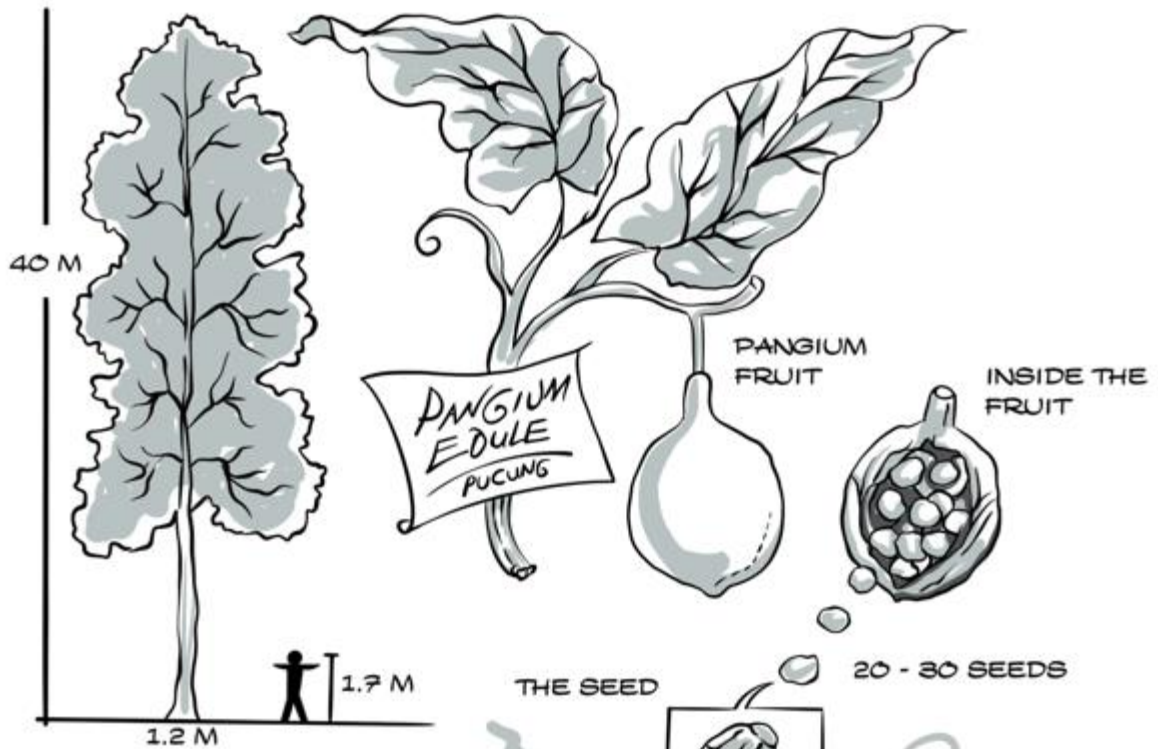
INDEPENDENT, BUT STILL POWERLESS DUE TO VARIOUS POLITICAL UPHEAVALS, ERODING THE POWER AND ENTHUSIASM TO HANDLE BIOLOGI·L NATURE.

RJ	—	RIS	—	NKRI
OLD ORDER	—	PKI	—	PERMESTA
PRRI	—	DI/TII	—	GBOS



EVEN IN THE 21ST CENTURY, SPICES ·S THE M·IN R·W M·TERI·L FOR TRADITION·L MENU SE·SONINGS. ·RE NOT CLOSE ·ND F·ILIAR TO THE 2 GENER·TION WHO ARE INCRE·SINGLY SPOILED BY V·RIOUS F·CILITIES OF MODERN LIFE P·TTERNS.





*Common names
 across the Archipelago:*

Kepayang
 SUMATERA - KALIMANTAN

Kapecong
 WEST SUMATERA

Kalowa
 BUGIS

Nagaful
 TANIMBAR

Pangi
 BALI - SUNDAWA

Pucung, Picung
 JAVA

1. CLEAN THE SEEDS
 AND BOIL THEM FOR
 AT LEAST 60 MINUTES



2. LET THE SEEDS
 COOL



3. PLACE THE SEEDS
 ALONG WITH SOME
 ASHES INTO A PLASTIC
 BAG, FERMENT IT FOR
 30 - 40 DAYS



READY AS A
 SEASONING

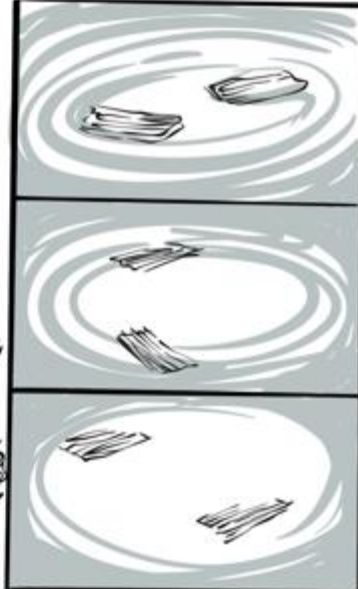


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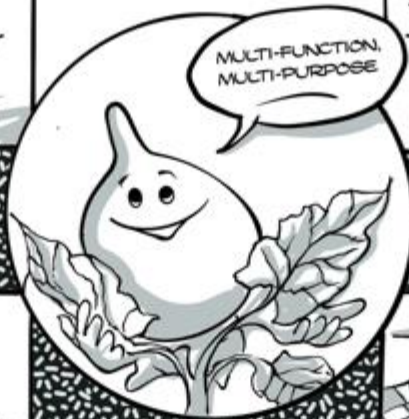
Natural Properties of Pangium Herbs

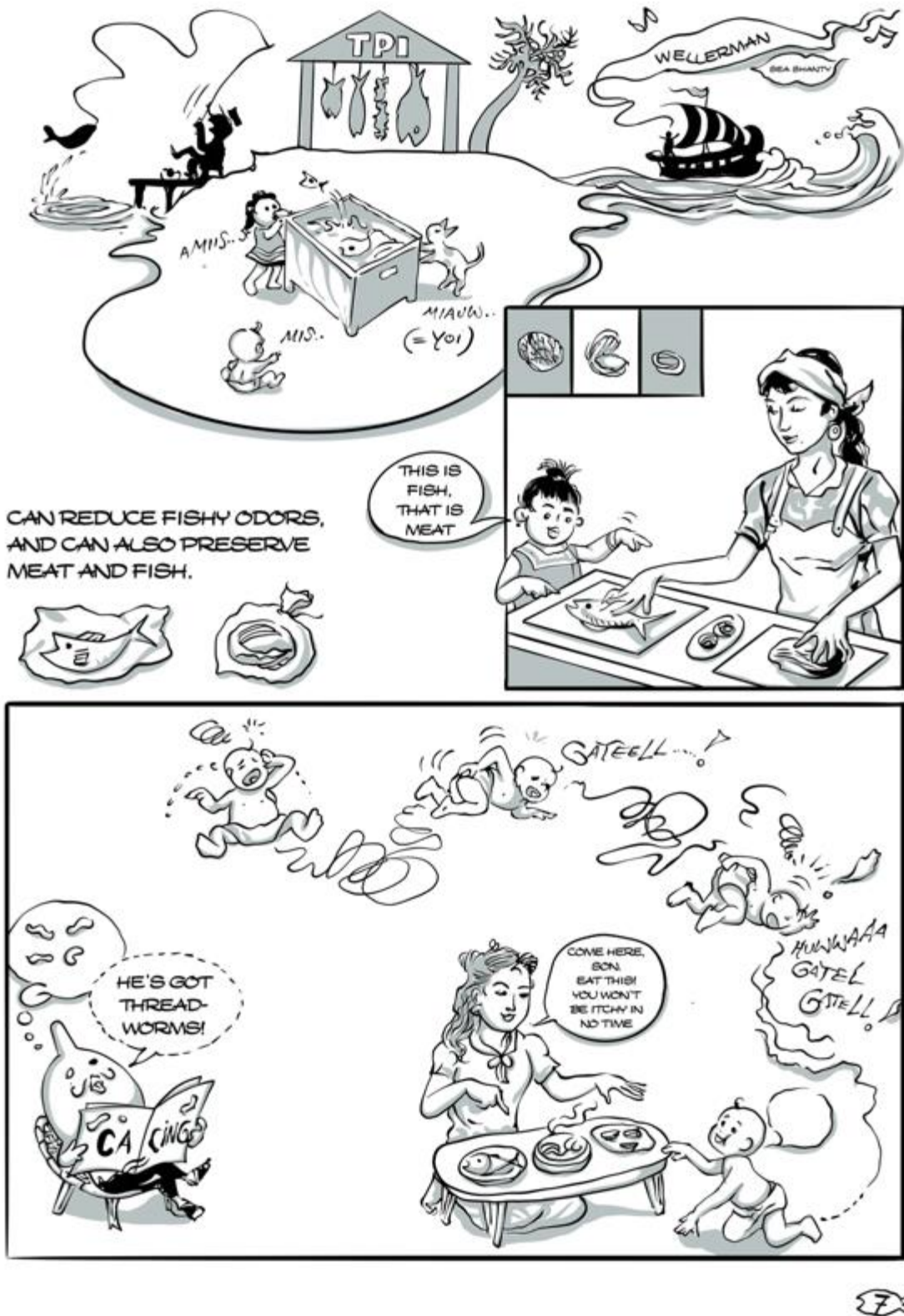


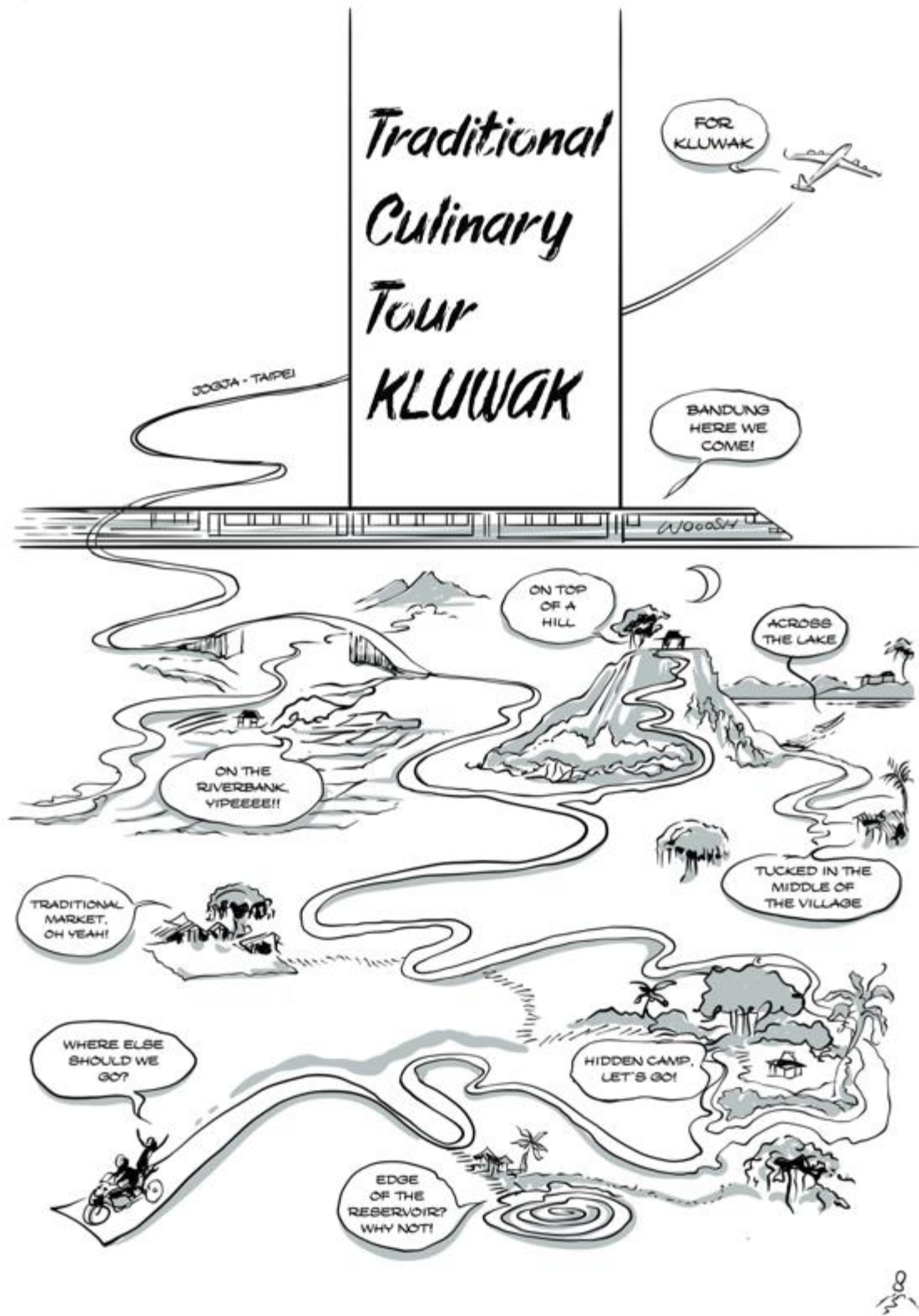
THE BARK OF THE PANGIUM TREE HAS A DISINFECTANT SUBSTANCE, CAPABLE OF ABSORBING, DISSOLVING, CONTAMINATION LEVELS IN PUDDLES.

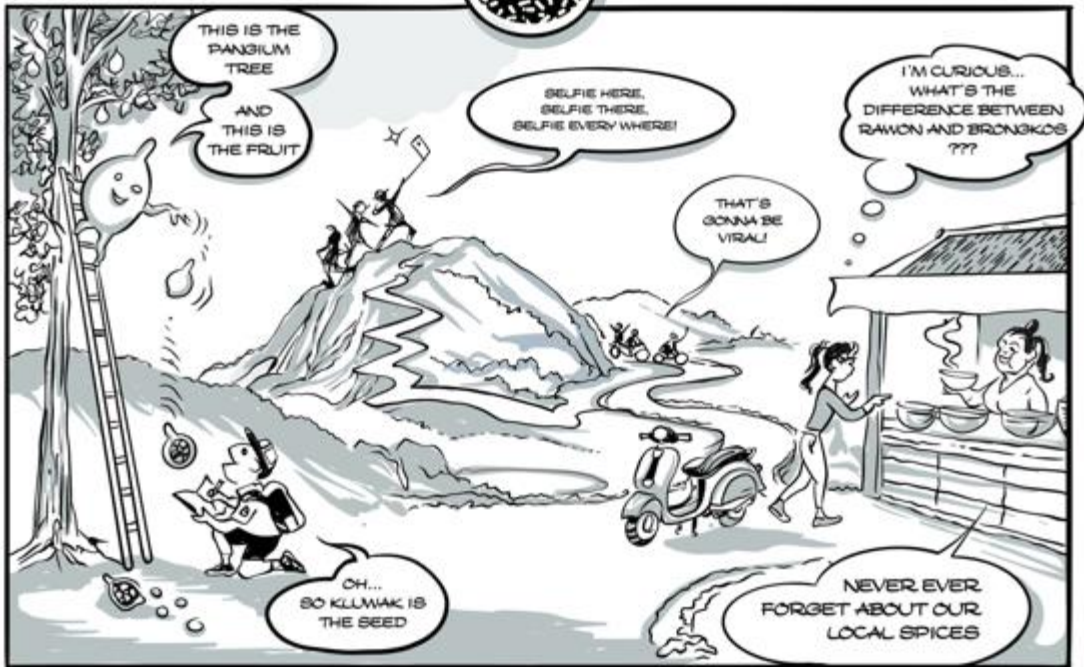


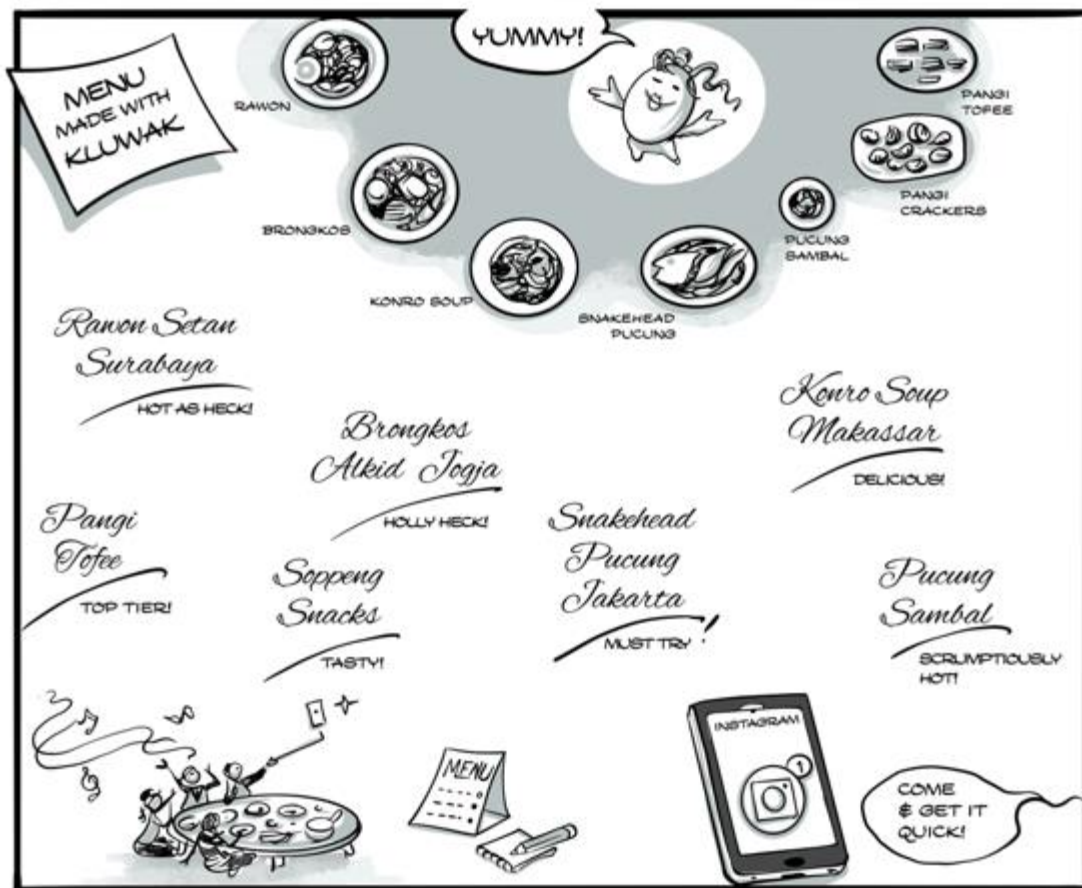
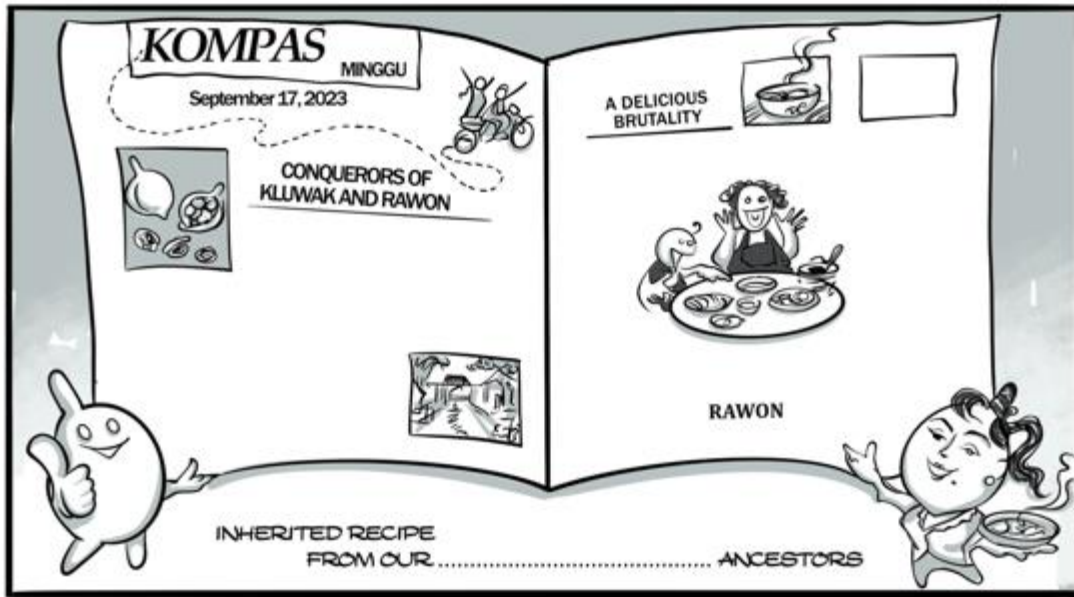
PANGIUM LEAF SAP CONTAINS TANNINS

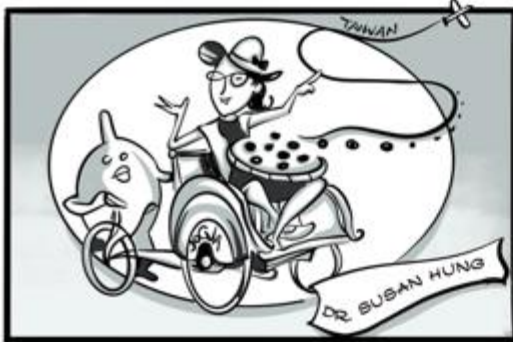












BOUGHT KLUWAK FROM BERINHARJO MARKET, JOGGJAKARTA TO BRING BACK TO HER HOME COUNTRY, TAIWAN



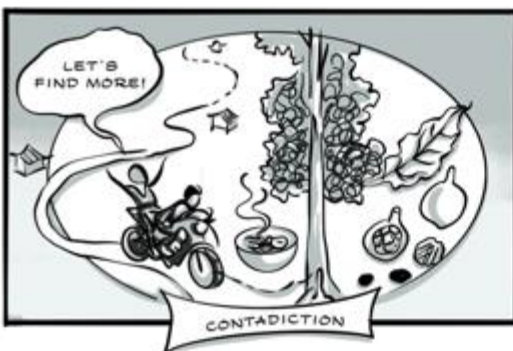
CLAIMED THAT THE NUTMEG PLANTS IN HIS COUNTRY, GRENADA, ORIGINATED FROM INDONESIA



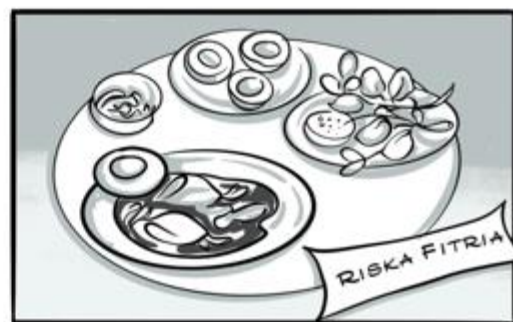
WON A FISHING TOURNAMENT USING BAIT MADE OUT THE PULP OF KLUWAK SEED. EVEN FISH LOVES KLUWAK!



THIS BETAWI SPECIALTY IS OFTEN FOUND AT THE JAKARTA FAIR.

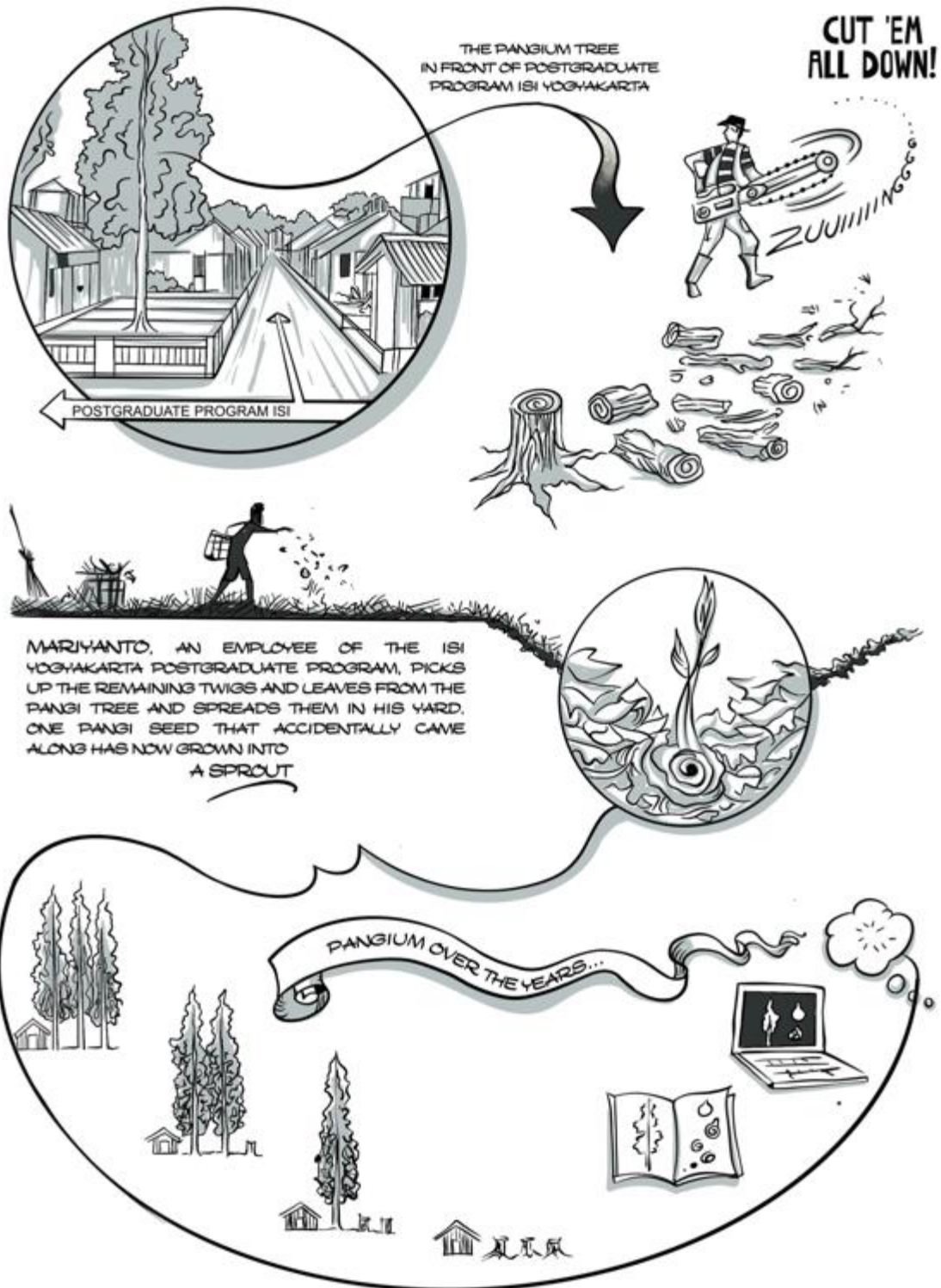


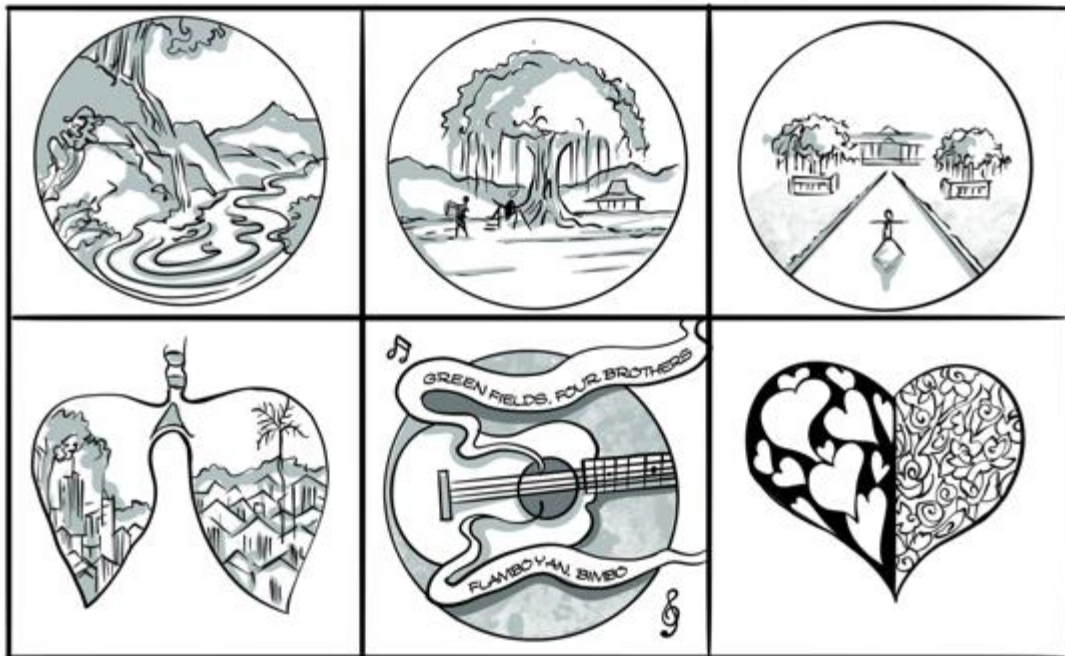
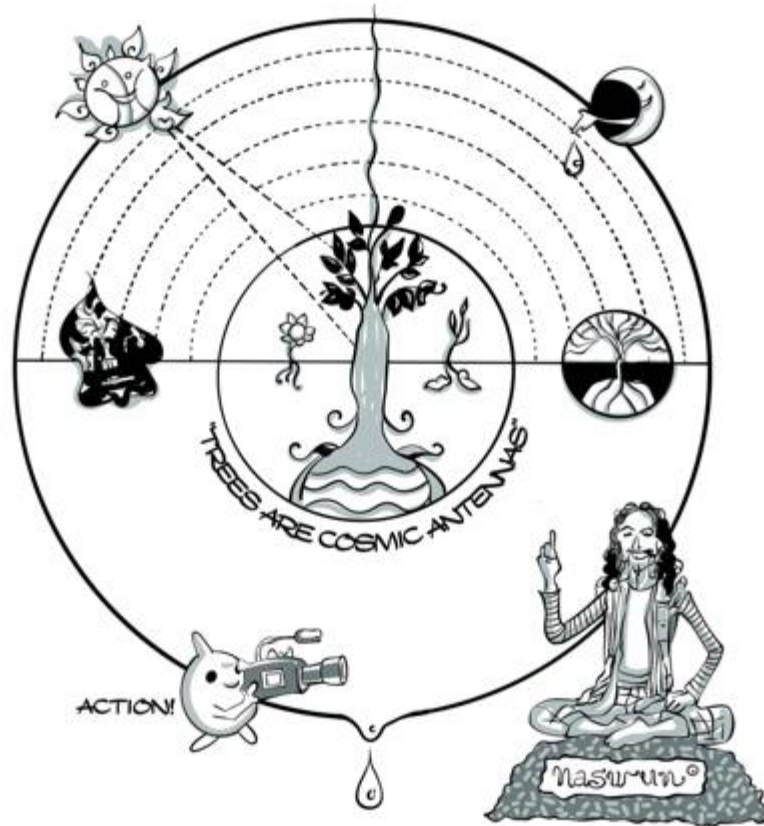
FOODIES KNOW NOTHING ABOUT SPICE TREES

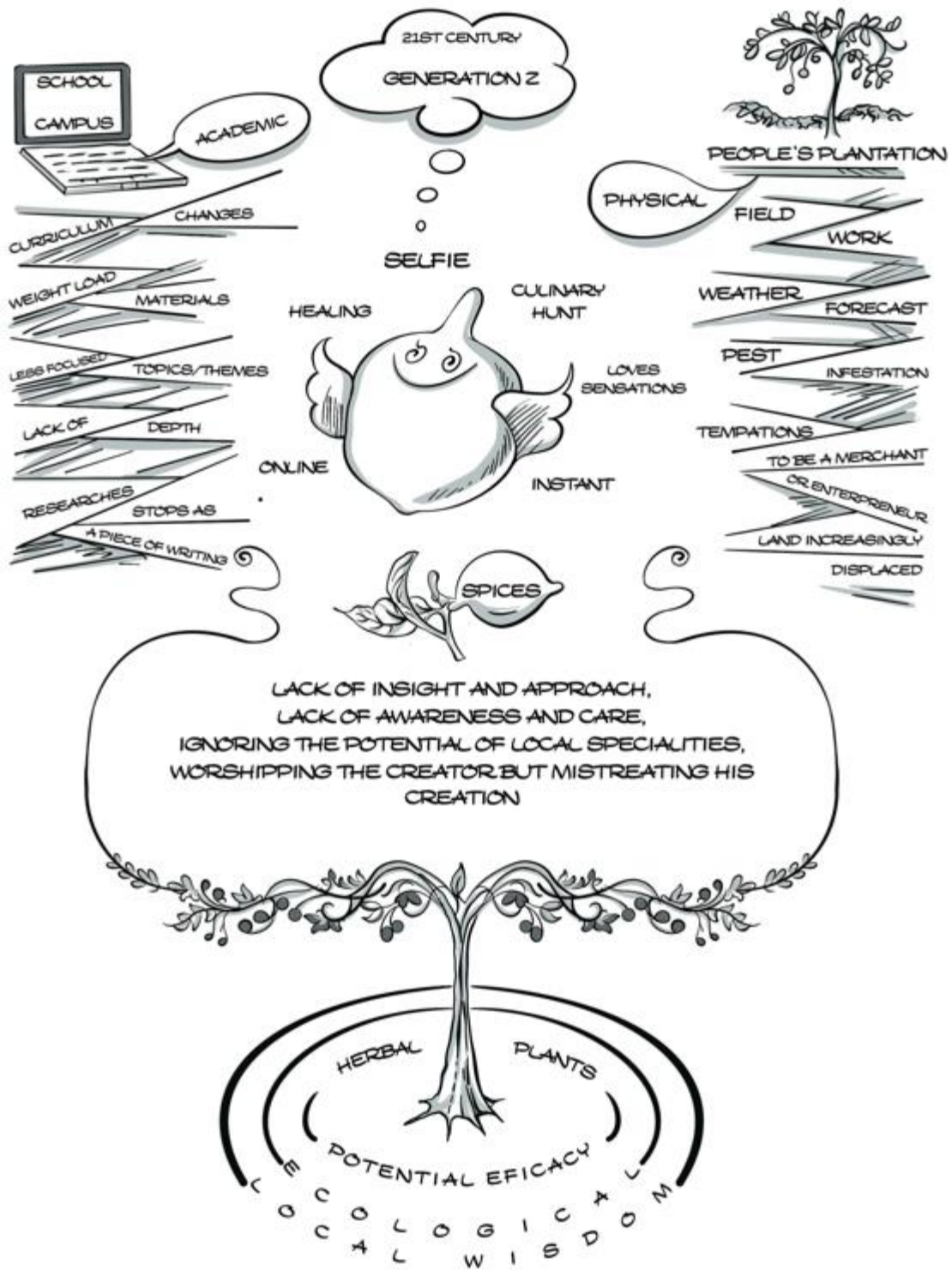


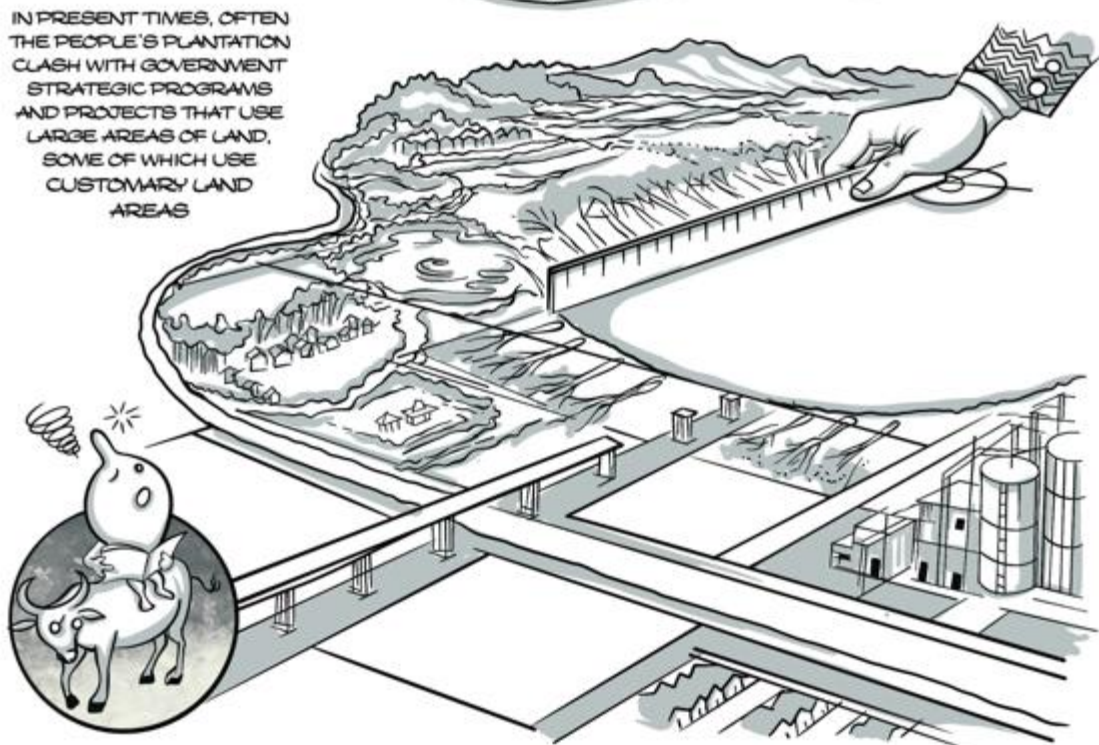
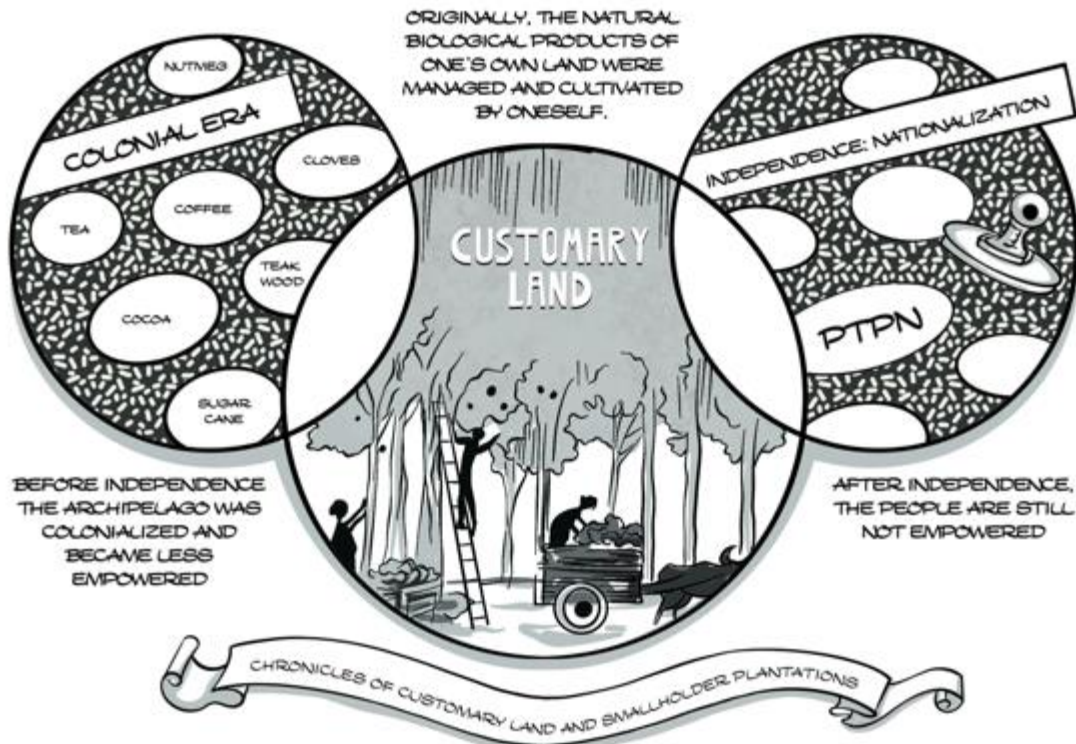
RAWON WAS NAMED 'THE BEST SOUP' BY TASTE ATLAS., FEBRUARY 28, 2024













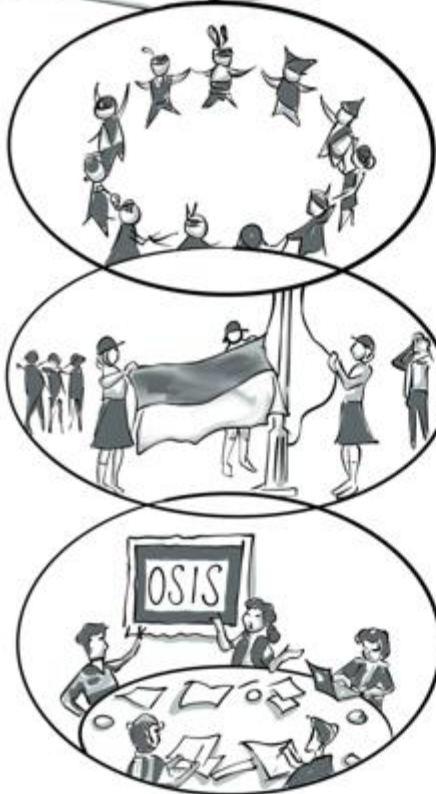
Paku Buwana IV
SURAKARTA SULTANANE, WROTE
Serat Wulang Sunu

AS A RESULT OF THINKING, CONTEMPLATION,
APPRECIATION, WHICH IS POURED INTO WRITING
CONTAINING PHILOSOPHICAL VALUES OF LIFE.

Wulang Reh

ADVICE ON MORAL EDUCATION, KNOWLEDGE OF
VIRTUES, SELF-CONTROL, PERSONALITY,
WISDOM, SINCERITY, MANNERS, FILIAL PIETY

IN ORDER TO ACHIEVE NOBILITY OF LIFE.



Serat Wulang Sunu

ADVICE ON THE IMPORTANCE OF
HARMONY, UNITY AND INTEGRITY.

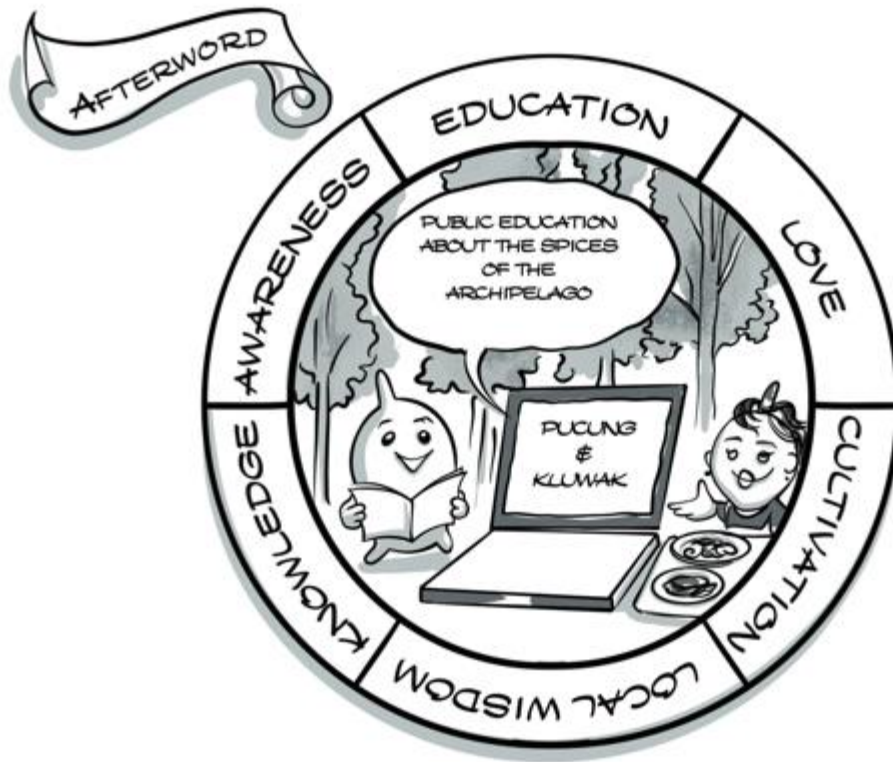
"KAWULANE KALLWAK NOMNOMANIPUN
PAN DADI SATUNGGAL PUCUNG ARANIRA,
UGI YEN WUS TUWA KALLWAKE PISAH-
PISAH..."

WHEN YOUNG, THE KLUWAK FRUIT IS
FUSED TOGETHER AND CALLED PUCUNG,
WHEN OLD THE KLUWAK IS SEPARATED.

"AJA KAYA KALLWAK DUK ANIM KUMPUL
BISA, WIS ATUWA PATING SALEPAR SIJI-
SIJI, NORA WURLUNG DADI BUMBU
PINDHANG ULANG..."

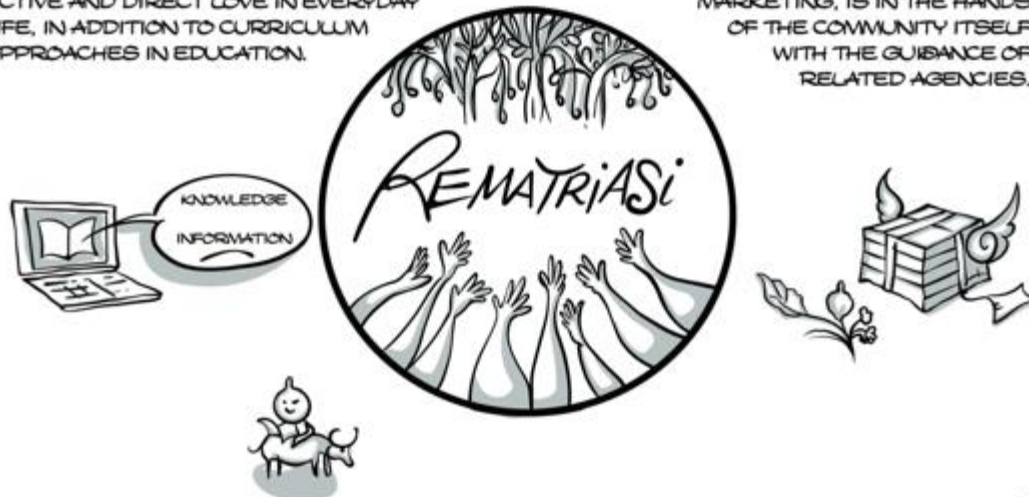
DON'T BE LIKE THE KLUWAK WHEN IT'S
YOUNG IT'S UNITED, BUT WHEN IT'S OLD
EACH ONE SPREADS OUT, EVENTUALLY
ONLY AS A SPICE.

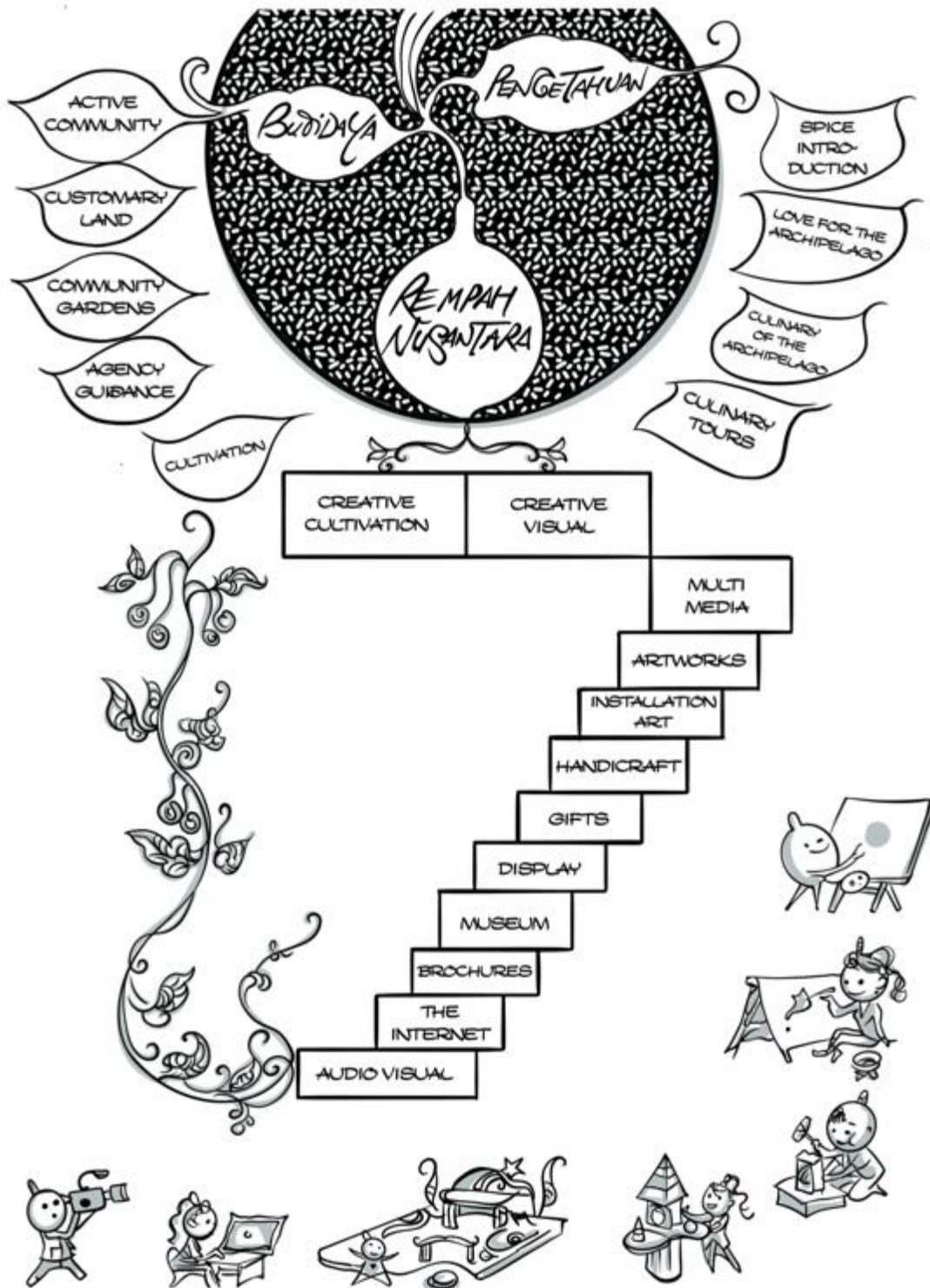




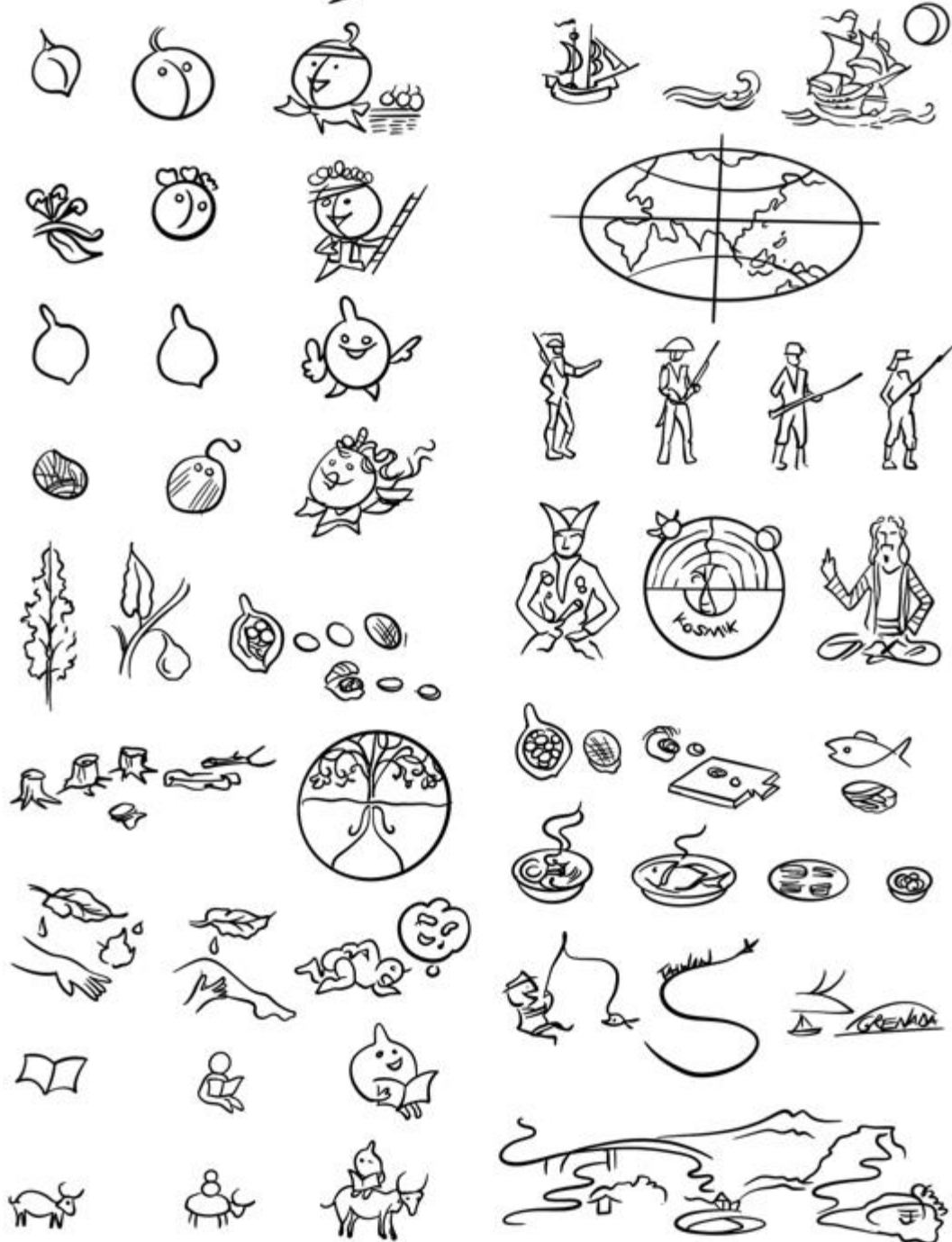
THE UPS AND DOWNS OF THE ARCHIPELAGO'S SPICES, BOTH IN THE COLONIAL PERIOD AND AFTER INDEPENDENCE UNTIL NOW, WHICH ARE AMONG THE SIEGE OF CHEMICAL PREPARATIONS AND INSTANT MODERN HERBAL PREPARATIONS, REALLY NEED AN ATTITUDE OF ATTENTION, AWARENESS, ACTIVE AND DIRECT LOVE IN EVERYDAY LIFE, IN ADDITION TO CURRICULUM APPROACHES IN EDUCATION.

VARIOUS EFFORTS NEED TO BE MADE TO RESTORE THE ESSENCE AND DIGNITY OF THE ARCHIPELAGO'S SPICES SO THAT THEY CAN RETURN FULLY TO MOTHER EARTH. THE ATTITUDE OF RESTORING BIOLOGICAL RESOURCES, LOCAL RESOURCES, CULTIVATION, PRODUCTION PROCESSING, TO MARKETING, IS IN THE HANDS OF THE COMMUNITY ITSELF WITH THE GUIDANCE OF RELATED AGENCIES.





Sketch Study



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