SY-04 The romance of the indigenous and the ethics of taking: appropriation, consent and the noble-healer trope

HEALING after the FALL, research library, SY-04

Researched 10 October 2026 by Claude Opus agent for THRIVING after the FALL, Book Four. Library document, unverified.

How to read this report

This is an ethics paper, so the medical frame is adapted. The "procedures" are the book's own practices: receiving knowledge from a tradition, testing it, crediting it, and deciding when to stay silent. Both errors in the brief are safety problems. Romance lets a toxic or useless remedy pass untested. Extraction takes knowledge without consent, credit or return, and communities that have been robbed stop sharing.

Plants in the case histories carry Latin binomial, part used and lookalikes. My own inferences and unconfirmed claims carry [VERIFY].

1. The two errors

Romance treats a remedy as wise because it is old, indigenous or "natural". Extraction takes knowledge without consent, credit or return. The two feed each other. Romance makes indigenous knowledge worth taking ("ancient San secret"), and extraction strips it of the people and context that kept it safe, so the reader receives a plant name and a claim without the preparation, the dose, the exclusions or the healer's judgement.

A third error, dismissal, treats traditional knowledge as superstition until a laboratory blesses it. The evidence is against it. Fabricant and Farnsworth (2001) counted 122 plant-derived compounds of defined structure used as drugs, from 94 species, and found that 80% had an ethnomedical use identical or related to the current use. That counts the winners and not the many traditional uses that yielded nothing, so it shows signal, not that any given remedy works.

The screening trials make the same point from the other side. Khafagi and Dewedar (2000), screening plants from Sinai, found antimicrobial activity in 83% of plants chosen by traditional use against 42% of randomly chosen plants, but the random set contained a higher share of strongly active species (13.9% against 8.3%) (reported in a secondary review, original not read). Slish and colleagues (1999) in Belize found smooth-muscle relaxant activity in 4 of 31 ethnobotanically chosen plants and 0 of 32 random ones, a small sample (secondary review). The largest comparison I found, Gyllenhaal and colleagues (2012) in Vietnam and Laos, found that random collections had a higher hit rate per collection, that ethnomedical samples were more often active, and that plants whose traditional use matched the assay did not do significantly better than random plants (abstract only). The honest summary is that tradition is a better-than-random guide for some targets (tuberculosis, malaria and antimicrobial screens), and no better than random for others (HIV, cancer). Tradition is a signal, not a verdict. This is exactly the stance the book's brief takes: trust neither until tested.

2. The biopiracy cases and what each taught

2.1 Hoodia and the San (South Africa, Namibia, Botswana, 1937 to 2010)

Plant: *Hoodia gordonii* (Masson) Sweet ex Decne. (Apocynaceae), a spiny succulent of the Kalahari and Namaqualand. Part used: the fleshy stem, chewed raw. Lookalikes: other stapeliad succulents, including other *Hoodia* species and the related *Huernia* and *Stapelia*, and spiny succulent *Euphorbia* species whose latex burns skin and eyes [VERIFY: no lookalike source read for this report].

What the tradition says. San hunters chewed the stem to suppress hunger and thirst on long hunts, a use recorded in 1932 and 1937 (secondary summaries). The Council for Scientific and Industrial Research (CSIR) included *Hoodia* in a 1963 study of edible wild plants.

What the record shows. The CSIR isolated the steroidal glycoside it called P57, filed a South African patent application in 1997 and an international one in 1998 (WIPO IP Advantage), and licensed P57 to the British firm Phytopharm, which sub-licensed it to Pfizer. The San were not consulted. Phytopharm's head was quoted as saying the people who discovered the plant had "disappeared" (Mail and Guardian 2003). The CSIR apologised. After a San campaign from 2001, with the lawyer Roger Chennells, a memorandum in February 2003 and an agreement in March 2003 recognised the San as custodians and gave them 6% of the CSIR's royalties. Projections spoke of R8 million to R12 million over four years. By November 2010, when Phytopharm returned its rights, the San had received about R500,000, roughly US$73,000 (Makoni 2010).

Pfizer and then Unilever withdrew. Unilever's trial (Blom and colleagues 2011) randomised 49 healthy overweight women to 1 g of purified extract twice daily or placebo for 15 days. Energy intake and weight did not differ. The extract raised blood pressure, pulse and heart rate and caused nausea, vomiting and disturbed skin sensation (NutraIngredients 2011, full paper not read). The genus went onto CITES Appendix II in 2004 after wild harvesting for the supplement trade (CITES 2013).

What scholars infer. Wynberg, Schroeder and Chennells (2009), the main scholarly account, treat the case as a source of lessons and concede that mistakes were made (front matter read). Vermeylen (2007) interviewed San and argued that where power is unequal, the stronger party defines "fair and equitable" (abstract only). Representation was contested, because the South African San Council signed for all southern African San.

Lessons. The San use was real, but the drug failed and caused harm in a trial: the romance lay in turning a hunting aid into a slimming pill, not in the tradition. Consent came after the patent, and only because the San had a lawyer. The money was small. A claim that the holders have "disappeared" is a red flag for extraction.

2.2 Neem and turmeric (India, 1994 to 2005)

Plants: *Azadirachta indica* A.Juss. (Meliaceae), neem. Parts used: seed oil, leaf, twig. Dangerous lookalike: *Melia azedarach* L., the chinaberry or Persian lilac, a close relative whose fruit is poisonous [VERIFY: lookalike not sourced in this report]. *Curcuma longa* L. (Zingiberaceae), turmeric. Part used: rhizome, as powder or paste.

The neem patent. European Patent 0436257, for controlling fungi on plants with hydrophobic extracted neem oil, was granted in 1994 to the US Department of Agriculture and W.R. Grace. In 1995 Vandana Shiva's Research Foundation, the International Federation of Organic Agriculture Movements (IFOAM) and the MEP Magda Aelvoet opposed it, arguing that neem's fungicidal use had long been public in India. The Opposition Division revoked it in May 2000 (sources give 10 or 11 May), and the Board of Appeal dismissed the appeal on 8 March 2005 in case T 0416/01, for lack of inventive step (GRAIN 2005, Down To Earth 2000). IFOAM's Linda Bullard drew the lesson that traditional knowledge can establish prior art (GRAIN 2005). I could not open the decision itself.

The turmeric patent. United States Patent 5,401,504, granted on 28 March 1995 to the University of Mississippi Medical Center, claimed the use of turmeric to promote wound healing. India's CSIR challenged it on 28 October

1996 with documentary evidence of prior use, reportedly 32 references, some over a century old, in Sanskrit, Urdu and Hindi (North Bengal University thesis, secondary). On 13 August 1997 the USPTO rejected all six claims (Reuters, reprinted on the Indology list, 1997).

What the record shows next. India built the Traditional Knowledge Digital Library (TKDL) from 2001 so that examiners could find Indian prior art. Its figures are self-reported and inconsistent: about 0.224 million formulations and 24 European cases withdrawn or cancelled since July 2009 in one account, and 110 successes claimed by 2012 (CBD 2010, search summaries). Patent offices use it under non-disclosure agreements, so it is defensive, not public.

Lessons. The legal harm of biopiracy is the claim of exclusive rights over knowledge others already hold, and the defence is prior art that an examiner can read. But documentation is itself a risk, because published knowledge is free to anyone. The TKDL model suits this book: publish what is already widely known, and keep restricted knowledge out of view.

2.3 The rosy periwinkle (Madagascar, Jamaica, Canada, 1952 to 1960s)

Plant: *Catharanthus roseus* (L.) G.Don (Apocynaceae). Part used in folk medicine: leaves and roots as tea. The whole plant is toxic. Lookalikes: the garden periwinkles *Vinca minor* and *Vinca major*, which share the common name.

What the tradition says. Leaf tea was used for diabetes in many places where the plant had spread as an ornamental, including Jamaica, India, the Philippines and South Africa (Wikipedia, Catharanthus roseus).

What the record shows. In 1952 the physician Clark Noble sent his brother Robert Noble, at the University of Western Ontario, 25 leaves from Jamaica, where periwinkle tea was used for diabetes (Canadian Medical Hall of Fame). Accounts differ on who the original informant was. The extract did not lower blood sugar in animals but destroyed white cells and marrow. Charles Beer isolated vinblastine by 1958, the first clinical trial ran in Toronto in 1959, and Eli Lilly separately developed vincristine (Kohn, NCI). The plant was later shown not to be antidiabetic.

What scholars infer. The periwinkle is the poster child of biopiracy: Madagascar's plant, billions for industry, nothing for the Malagasy. The record supports a narrower story. The lead came from Jamaican folk use of a pantropical weed, the folk claim was wrong, and no source I found shows Malagasy healers guiding the research. Revenue figures in circulation are unsourced (Wikipedia, Catharanthus roseus). The healers knew a biologically active plant, not its cancer use.

Lesson. Credit a tradition for what it actually said. A lead can be owed credit even when its claim was wrong, and inflating the claim to make a moral point is its own disrespect.

2.4 Ayahuasca and the "Da Vine" plant patent (United States and Amazonia, 1986 to 2003)

Plant: *Banisteriopsis caapi* (Spruce ex Griseb.) Morton (Malpighiaceae). Part used: the stem, cooked usually with leaves of *Psychotria viridis*. The brew contains a monoamine oxidase inhibitor and is dangerous with many drugs and foods [VERIFY: interaction detail not sourced in this report].

The record. In 1986 the American Loren Miller obtained US Plant Patent 5,751 on a strain he called "Da Vine". The Coordinating Body of Indigenous Organisations of the Amazon Basin (COICA), representing over 400 groups in eight countries, and the Center for International Environmental Law sought its cancellation. The USPTO rejected the patent in 1999 on herbarium prior art, reversed itself on 26 January 2001, and the patent expired on 17 June 2003 (Press 2022, EcoAmericas 1999).

Lessons. A stranger patented a sacrament abroad without any indigenous party knowing. The brew is sacred to many peoples and pharmacologically hazardous, so the book treats it as a case in law, not as a remedy.

2.5 The Maya ICBG (Chiapas, Mexico, 1998 to 2001)

The record. In September 1998 the US International Cooperative Biodiversity Groups programme awarded about US$2.5 million to "Drug Discovery and Biodiversity among the Maya in Mexico". The partners were the University of Georgia (the anthropologists Brent and Elois Ann Berlin), El Colegio de la Frontera Sur (ECOSUR), the Welsh firm Molecular Nature Ltd, and PROMAYA, a new body to receive benefits for the Maya. The Council of Indigenous Traditional Midwives and Healers of Chiapas (COMPITCH), backed by RAFI (later ETC Group), objected that PROMAYA was the project's creature, that individual or village consent could not license knowledge held across many Maya communities, and that Mexico had no legal framework. Mexican authorities refused key permits. A redesign in August 2001 was rejected, and the project ended in November 2001, two years into five (ETC Group 2001, Shebitz and Oviedo 2018, Texas Observer 2001). The Berlins later called it a project that "should have succeeded" (Berlin and Berlin 2004, title only).

Lessons. This was no smash-and-grab. It had a benefit-sharing design and experienced ethnobotanists. It failed on who may say yes. Consent from those in the room is not consent from the people who hold the knowledge, and a book cannot cure that by naming one healer.

2.6 Smokebush (Western Australia, 1981 to 1990s)

Plant: *Conospermum* species (Proteaceae), the smokebushes of south-western Australia. Part used: roots in the screening work.

The record. A US Department of Agriculture botanist collected smokebush for the National Cancer Institute in 1981. Cancer screens were negative, but an HIV rescreen in the late 1980s found smokebush among four active plants out of about 7,000, yielding conocurvone. On 22 December 1993 Western Australia signed with AMRAD, holder of the NCI's exclusive licence, for "more than $5 million" to the state (Western Australian Government 1993). The statement does not mention Aboriginal people. Kerr (2010) reports claims of common Nyoongar use, while a state conservation source says there is no record of Aboriginal use (search summary). No drug reached the market.

Lesson. The smokebush case shows the third party in most biopiracy stories: the state. Benefit-sharing agreements are signed by governments, and governments may keep the benefits. It also shows that the evidence of traditional use can be thin or contested even in a famous case. The book must not assert a traditional use it cannot document.

3. The positive cases, and why they are few

The Kani and Jeevani (Kerala, India, 1987 to 2008). Kani guides shared with scientists of the Tropical Botanic Garden and Research Institute (TBGRI) their use of arogyapacha, *Trichopus zeylanicus* Gaertn. (Dioscoreaceae), fruit and leaves, against fatigue. The formulation Jeevani was licensed in 1996 to the Arya Vaidya Pharmacy, Coimbatore, for Rs 10 lakh and a 2% royalty, half promised to the Kani. A trust formed in 1997 received Rs 5 lakh in 1999 (CBD case study, Down To Earth). Critics note that benefits reached only some Kani, that the Forest Department claimed a share, and that customary rights rest with particular healers, the plathis (Gupta, IIMA). The project was shelved in 2008.

Rooibos (South Africa, 2019 to present). In November 2019 the industry around *Aspalathus linearis* (Burm.f.) R.Dahlgren (Fabaceae), leaf and fine stem, agreed with the National Khoi and San Council and the South African San Council that processors pay a 1.5% levy on the farm-gate price each year. The first payout, just over R12.2 million, was split equally in July 2022, R6,138,961 to each trust (Government of South Africa 2022). A single source reports R42.7 million by 2024 [VERIFY]. A 2026 parliamentary question objected that the levy ignores downstream value.

Why so few? The Nagoya Protocol, adopted in 2010 and in force since 12 October 2014, asks parties to ensure "as appropriate" that traditional knowledge is accessed with the prior informed consent or approval and involvement

of its holders, on mutually agreed terms (Nagoya Protocol Article 7). It has about 142 parties. Its practice is measured in permits, not money. By 15 November 2022, 25 countries had issued 4,344 certificates of compliance, 1,281 for commercial use and 3,136 from India alone (Varshney 2022). By March 2026 the total was 6,311, India 3,561 (News On Air 2026). I found no global figure for money reaching communities. The Cali Fund for digital sequence information, launched on 25 February 2025, is voluntary (1% of profits or 0.1% of revenue), and the CBD's executive secretary called its capitalisation "obviously disappointing" (Thambisetty 2024 and later coverage). Researchers complain of paperwork, with European due-diligence records kept for 20 years (Smyth, Chemistry World).

The WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge, adopted on 24 May 2024, requires patent applicants whose inventions are based on genetic resources or associated knowledge to disclose the country of origin or the community that provided the knowledge. Offices need not verify it, and apart from fraud a patent cannot be revoked for non-disclosure. It needs 15 ratifications (WIPO 2024), and the count I found was three, possibly out of date [VERIFY]. The broader WIPO committee text, negotiated since 2000, remains unsettled. Its draft tiers give the strongest protection to secret and sacred knowledge and best-effort integrity protection to widely diffused knowledge (IP-Watch 2016, 2018).

Benefit sharing works best when industry-wide and automatic (rooibos), worse when it hangs on one drug (Hoodia), and worst when it rests on who signs (Maya ICBG). The sums are small. A book cannot pay royalties, but it can do the cheap parts: name the source, honour restrictions, give the knowledge back in usable form.

4. The ethics statements

The International Society of Ethnobiology Code of Ethics was adopted at Chiang Rai, Thailand, on 8 November 2006, with additions at Cusco, Peru, on 26 June 2008 (ISE 2008). Its 17 principles are: prior rights and responsibilities, self-determination, inalienability, traditional guardianship, active participation (including review of results before publication), full disclosure, educated prior informed consent (which includes the community's right to say no), confidentiality (the right to exclude information from publication), respect, active protection, precaution, reciprocity and equitable sharing, supporting indigenous research, the dynamic interactive cycle (finish what you start, including returning results), remedial action and restitution, acknowledgement and due credit "in accordance with their preference", and diligence. The guidelines ask that provenance be kept "included and traceable" in later publications.

The CARE Principles for Indigenous Data Governance, released by the Global Indigenous Data Alliance in September 2019, add four words to the open-data movement's FAIR principles: Collective benefit, Authority to control, Responsibility and Ethics (GIDA 2019). The point is that "open" is not neutral: making data findable and reusable can strip control from the people it describes.

The UN Declaration on the Rights of Indigenous Peoples is not binding but sets the standard most codes cite (United Nations 2007). Article 24 recognises the right to traditional medicines and health practices, including conservation of medicinal plants, animals and minerals. Article 31 recognises the right to maintain, control, protect and develop traditional knowledge, explicitly including medicines and knowledge of the properties of fauna and flora.

The AIATSIS Code of Ethics (AIATSIS 2020) rests on Indigenous self-determination, Indigenous leadership, impact and value, and sustainability and accountability, and the library sector's ATSILIRN Protocol 6 covers secret, sacred or sensitive material (search summaries). Local Contexts, developed by Jane Anderson and Kim Christen, offers Traditional Knowledge Labels that communities attach to material outside their control, stating custodians and conditions of use (Anderson and Christen 2019). The labels are educative, not legal. The Mukurtu platform, built with the Warumungu, encodes graded access.

These statements converge on six duties a book can meet: ask, name, do not publish what is restricted, show the holders how they are represented, return something, keep the provenance trail. They are silent on what to do when holders cannot be reached, which section 8 addresses.

5. Colonial medicine: use and suppression together

Colonial medicine took local knowledge and outlawed local healers at the same time. The pattern repeats across continents.

Use. The *Hortus Malabaricus* (12 volumes, Amsterdam, from 1678), compiled under the Dutch governor of Malabar Hendrik van Rheede, rested on Itty Achuden, an Ezhava physician of a caste then treated as low, who in 1675 dictated plant names and uses in Malayalam. Three Konkani Brahmin physicians, Ranga Bhat, Vinayaka Pandit and Appu Bhat, checked the text, and Itty Achuden's certificate appears in volume one (Public Domain Review). Because the credit was printed, it could later be argued over. Cinchona bark (*Cinchona* species, Rubiaceae) reached Europe via Jesuits in Lima around 1631. Andean febrifuge use predates contact but is poorly recorded, and the Countess of Chinchón legend, first written in 1663, does not survive scrutiny of her dates (Wikipedia, Cinchona). Linnaeus's genus name of 1742 honours a legend, not the people who knew the bark.

Selective ignorance. Schiebinger (2004) follows the peacock flower, *Caesalpinia pulcherrima* (L.) Sw. (Fabaceae), seeds. Maria Sibylla Merian recorded in 1705 that enslaved African and Indigenous women in Dutch Suriname used it to end pregnancies. Europe grew the plant as an ornamental, but the knowledge never entered European medicine. Schiebinger calls this agnotology, culturally induced ignorance (descriptions read). Absence from the colonial record is not absence from the tradition.

Suppression. New Zealand's Tohunga Suppression Act 1907, introduced by James Carroll and supported by the four Māori members, punished tohunga claiming supernatural powers with fines up to £25 or six months in prison. Prosecutions were few, but rongoā went underground until repeal in 1962 (Te Ara, Wikipedia). South Africa's Witchcraft Suppression Act 1957, descended from a Cape law of 1895, remains in force (Wikipedia, Witchcraft Suppression Act). Canada's Indian Act amendment, in force from 1 January 1885, made the potlatch and Tamanawas dance punishable by two to six months in prison. In 1922 police arrested 45 people after a potlatch at 'Mimkwa̱mlis. The ban ended in 1951 (Canadian Encyclopedia).

Two lessons follow. A tradition's secrecy is often the scar of suppression, and a book that demands openness asks healers to trust the institutions that punished them. And the colonial case against healers was not always false: the Tohunga Act grew partly from concern about untrained practitioners. The book must not pretend every healer was safe, nor accept the colonial word that none were.

6. The noble healer and the ecological Indian

Ter Ellingson (2001) argued that the modern noble-savage myth was revived in 1859 by John Crawfurd, later president of the Ethnological Society of London, as a straw man to make sympathy for indigenous peoples look naive (description and reviews read). The thesis is contested, but the point holds: the trope serves dismissal as well as romance.

Kent Redford (1991) named the "ecologically noble savage" and argued that deep ecological knowledge did not mean harmony with nature. Shepard Krech's *The Ecological Indian* (1999) used North American cases (bison drives, beaver trapping, fire) to argue that the image was a European projection. Historians praised it (Binnema, BC Studies). Vine Deloria Jr. attacked its evidence, and Harkin and Lewis (2007) collected responses, including the Penobscot scholar Darren Ranco's. Hames (2007) split the debate into case studies of conservation and a political thread about who uses "ecological nobility" (abstract read).

The medical equivalent is the noble healer, whose remedies are gentle and whose knowledge is timeless. It erases the healer's caution (exclusions, dose limits, remedies kept for specialists). It erases change: among 1,151 Tsimane' in Bolivia, Reyes-García and colleagues (2013) found knowledge changing rather than simply eroding (summary read). And it sets the tradition up for dismissal when a "shaman's remedy" fails.

The Māori rongoā standard written by practitioners with the Ministry of Health (2014) shows what a tradition says

about itself when it writes the frame. *Tikanga ā-Rongoā* describes rongoā as a whole practice that combines healing tradition, environment and mātauranga, including rongoā rākau (plant remedies), mirimiri (bodywork) and karakia (prayer and incantation), and states that it is not a modality from which components can be picked or ignored at will. It acknowledges the mana of each rohe (region) and its own tikanga, so practice is local and varies. It sets requirements for confidentiality, sustainable harvesting and audit of how remedies are made (Ministry of Health 2014, read in full). This is neither noble healer nor superstition but a professional standard in the tradition's own terms.

7. Restricted knowledge: what the book should not publish

Three cases set the boundaries.

Foster v Mountford (Northern Territory, 1976). The anthropologist Charles Mountford's *Nomads of the Australian Desert* published sacred Pitjantjatjara material that had been given to him in confidence in the 1940s. On the application of the Pitjantjatjara Council, Justice Muirhead enjoined the book's sale, display and distribution in the Northern Territory. The order did not bind other states, and copies have since been sold elsewhere (Antons 2009 chapter, search summaries). The case established that customary secrecy can be protected in Australian law through confidence.

Hindmarsh Island (South Australia, 1994 to 2010). Ngarrindjeri women said the island held "secret women's business" that a bridge would violate, and a federal minister imposed a 25-year ban in 1994. Other Ngarrindjeri women called it fabricated, and a Royal Commission under Iris Stevens, set up on 16 June 1995, agreed. On 21 August 2001, in *Chapman v Luminis*, Justice John von Doussa of the Federal Court, on different evidence, was not satisfied that it was fabricated. The South Australian government accepted the claims in 2010 (Wikipedia, Hindmarsh Island bridge controversy). The bridge was built in 2001.

This is the brief's warning made concrete. Outsiders cannot tell real restrictions from gatekeeping, state inquiries can err, and insiders disagree in good faith. The rule: do not adjudicate. If a restriction is claimed, do not publish the content and do not rule on the claim.

Documentation as risk. WIPO's documentation work warns that writing knowledge down can move it into the public domain and destroy its secret character, and that holders have most say at the moment of access (WIPO 2002, 2017).

From these cases, five categories of knowledge emerge for the book:

1. Widely diffused knowledge, already published by its holders or in the open literature, and used across many communities (for example, honey on wounds, willow bark for pain, turmeric paste). The book may publish this, crediting the tradition and citing the source.
2. Narrowly diffused knowledge, held by a particular people and published in their own community-authored works or with their consent. The book may publish what they have published, crediting them as authors, and should not go beyond it.
3. Knowledge published by outsiders without consent, such as Mountford's. The book should not republish it, even though it is technically available, unless the holders have since released it.
4. Secret, sacred, gendered or initiated knowledge. The book does not publish it, does not hint at it, and does not describe how to obtain it. It may say that a tradition holds restricted knowledge in that domain and that it is held by its custodians.
5. Ceremonial uses of psychoactive or sacred plants (ayahuasca, peyote, iboga and similar). The book should not teach their use. This is a safety rule as much as an ethical one, because these preparations are dangerous outside the setting and supervision that the tradition provides.

The hardest edge is safety information inside restricted knowledge. If a restricted tradition uses a plant that is poisonous, readers who find the plant need to know it is poisonous. The book can warn about the plant from pharmacological and toxicological sources without revealing the restricted use. A warning is not a disclosure.

8. Does the Fall change the ethical calculus?

The Fall removes the machinery that made biopiracy profitable (patents, supply chains, drug firms) and the machinery of consent (ethics committees, lawyers, permit desks). Five arguments bear on whether the rules should change.

The necessity argument says the duty to share overrides the right to withhold when lives are at stake. It is strongest for widely diffused knowledge the book would publish anyway, and weakest for restricted knowledge, which mostly concerns ceremony and identity. I found no case where a restricted tradition held the only effective treatment for a lethal condition [VERIFY: absence of evidence, not systematic search].

The neighbour argument says that after the Fall the holders of these traditions are not distant "source communities" but people who may live in the same district. Extraction then becomes a local wrong with local consequences: a healer who sees her knowledge printed without her name will not share the next thing she knows. Trust is a medical resource. This argument strengthens the rules, not weakens them.

The preservation argument says that knowledge may die with its holders if it is not written down, so writing it is a service. WIPO's own documentation work accepts this for knowledge at risk of fading. But it applies only with the holders' consent, and the holders may judge that some knowledge should die with them rather than be misused.

The safety argument says the book will be used without the healer who knew when not to use a remedy. Kava (*Piper methysticum* G.Forst., Piperaceae, root) is drunk in the Pacific as a water extract. Germany withdrew kava medicines in June 2002 after liver-injury cases first linked to solvent extracts, though water-extract cases were reported by 2007, and German courts reversed the ban in 2014 and 2015 (NutraIngredients 2014, Pharmazeutische Zeitung 2015). Cassava (*Manihot esculenta* Crantz, Euphorbiaceae, root) is clearer: retting for 4 to 5 days removes cyanogens, while shortened processing causes konzo, a permanent paralysis (ANU Konzo Prevention Unit). A book that copies the plant but not the method copies the danger.

The credit argument says that after the Fall there is no money to share, so credit is the only currency left, and it costs almost nothing. Naming the people who taught a remedy is the minimum the book owes.

My conclusion: the Fall makes the rules simpler but not looser. Patent law and bioprospecting contracts vanish from the problem. What remains is what the ISE code reduces to: ask, name, respect restrictions, show the holders, give back, keep the trail.

9. The romance as a safety failure: the record of harm

The romance kills in documented ways.

Aristolochic acid nephropathy (Belgium, 1990 to 2000). From May 1990 a Brussels slimming clinic's mixture contained *Aristolochia fangchi* Y.C.Wu ex L.D.Chou and S.M.Hwang (Aristolochiaceae, root) in place of *Stephania tetrandra* S.Moore (Menispermaceae, root), confused through the shared name "fang ji". Kidney failure followed (Vanherweghem and colleagues 1993, via reviews). Nortier and colleagues (2000) examined the removed kidneys and ureters of 39 patients with end-stage disease: 18 had urothelial carcinoma, 46% (95% CI 29 to 62%), with higher risk above a cumulative 200 g (abstract read). The translation did the harm: a shared common name, no quality control, a new purpose, months of dosing.

Heavy metals in Ayurvedic preparations (Boston, 2003 to 2004). Saper and colleagues (2004) bought 70 Ayurvedic herbal products in the Boston area and found lead, mercury or arsenic in 14 (20%) from 11 makers, lead in 13, mercury in 6 and arsenic in 6. Concentrations ran from 5 to 37,000 micrograms per gram. Half of the contaminated products were labelled for children (summaries of the JAMA paper). Some metals in rasa shastra preparations are deliberate, and defenders argue that traditional processing detoxifies them. Saper's reply was that historical use without apparent toxicity does not show safety.

Hoodia, kava and cassava are described above. The common thread is that the remedy was taken out of its tradition (wrong species, wrong preparation, wrong purpose, wrong person, wrong dose) and sold or recommended on the strength of the tradition's reputation.

Evidence grades

The grades below apply to claims and practices discussed in this report. A to D grades follow the book's frame. X means shown ineffective or harmful.

Claim or practice	Grade	Basis
Traditional use is a better-than-random guide to biological activity	B for antimicrobial, antimalarial and tuberculosis targets, D for HIV and cancer	Khafagi and Dewedar 2000, Slish 1999, Gyllenhaal 2012, mixed and partly unreplicated
Most plant-derived drugs had a matching traditional use	B (descriptive, survivorship bias)	Fabricant and Farnsworth 2001, 80% of 122 compounds
"Traditional use establishes safety"	X	Aristolochia (46% urothelial carcinoma in a surgical series), Ayurvedic metals (20% of products), kava, Hoodia trial
"Traditional use establishes efficacy for the claimed purpose"	X as a general rule	Periwinkle (not antidiabetic), Hoodia (no effect on intake in RCT)
Copying a tradition's preparation method preserves its safety margin	C	Cassava processing, kava water extracts, Ge Hong's cold soak of *Artemisia annua* (Tu 2015, secondary accounts), partly contradicted by kava water-extract cases
Defensive prior-art documentation defeats bad patents	B	Neem (EPO 2000, 2005), turmeric (USPTO 1997), TKDL withdrawals (self-reported)
Benefit-sharing agreements deliver substantial money	D	Hoodia R500,000 over seven years, Kani trust Rs 5 lakh, rooibos R12.2 million in year one is the exception
Industry-wide levies outperform single-product deals	C	Rooibos versus Hoodia, two cases
Prior informed consent from individuals suffices for collectively held knowledge	X	Maya ICBG cancelled 2001
Indigenous peoples were uniformly conservationist	D, contested	Krech 1999 against Deloria, Ranco, Hames 2007
Restricted knowledge claims are generally genuine	Not gradable by outsiders	Hindmarsh Island, Royal Commission 1995 against Federal Court 2001
Suppression drove traditions underground and made them secretive	B	Tohunga Suppression Act 1907 to 1962, potlatch ban 1885 to 1951, consistent historical accounts

The three-way separation the frame requires is applied in each case history in sections 2 and 9: what the tradition said, what the record shows, and what scholars infer.

Means ledger

The "procedure" here is the book's handling of a traditional remedy: receiving it, testing it, crediting it and deciding whether to publish or use it. The ledger shows what each rung can do.

Rung	What can be done	What it changes
Hands and knowledge alone	Ask before recording. Remember who taught what. Say the teacher's name when passing it on. Refuse to pass on what was given in confidence.	Keeps trust, so the next remedy is shared. No testing possible, so risk of romance is highest.
At the hearth	Write a dated record with the teacher's name, place, plant, part, preparation, dose, who must not take it, and any restriction. Keep a pressed specimen. Prepare the remedy exactly as taught, not a stronger version.	Preserves the method, which is part of safety. A pressed specimen allows later checking of identity.
Garden and still	Grow the plant from known stock to avoid misidentification. Weigh doses on a scale. Keep a register of who took what and what happened. Return seed or plants to the teacher's household.	Removes the main cause of the Belgian disaster (wrong species). Turns anecdote into a series. Gives something back.
Village dispensary (300)	A lay healer keeps a remedy register and an outcome log. A microscope allows checking leaf structure against a reference specimen. Holds a meeting with tradition holders before any remedy enters the village book. Keeps restricted knowledge out of the common book and off the shelf.	Creates the consistent observational record that lifts a remedy from D or C toward B. Gives holders the review before publication that the ISE code asks for.
District infirmary (3,000)	A nurse or doctor can compare outcomes across villages, run simple controlled comparisons (for example, alternate allocation of two wound dressings), and keep the district's provenance register. Brokers agreements between communities about what is shared.	Allows the only real test of efficacy available after the Fall. Settles disputes about credit before they become feuds.

Rung	What can be done	What it changes
Hospital before the Fall (reference)	Ethics committee review, Nagoya permits, patent searches, laboratory identification by microscopy and chromatography, randomised trials, pharmacovigilance.	Catches contamination and adulteration (lead, aristolochic acid) that no village can detect. Cannot by itself make the encounter respectful.

The rung that matters most is the hearth. A written, dated, credited record of the exact method and exclusions does more for safety and for honesty than anything above it, and it costs only paper and the discipline to ask.

Harm test

How the romance kills or maims

- Wrong plant. Common names cross species (fang ji, periwinkle, "snakeroot", "willow"). Error that harms: using a name without a Latin binomial and a specimen. Example: Belgium 1990 to 1992, with kidney failure and urothelial cancer in nearly half of a surgical series.
- Wrong preparation. A water infusion becomes a solvent extract, or a fresh plant becomes a concentrated powder. Example: kava extracts in Europe, cassava processing cut short.
- Wrong purpose. A hunting-trip hunger aid becomes a daily slimming pill. Example: Hoodia, with raised blood pressure and no weight effect in a 15-day trial of 49 women.
- Wrong person. Traditions often exclude pregnant women, infants and the frail, and those exclusions are lost in transmission. Who must never receive an untested traditional remedy from a book alone: pregnant women, infants, the very old, the dehydrated, people with kidney or liver disease, and anyone already taking another remedy or drug.
- Contamination. Deliberate or accidental metals, moulds and adulterants. Example: 20% of Ayurvedic products in Boston, 2004.
- Delay. A romantic remedy used in place of an effective one for a red-flag illness. This is the most common lethal error and it leaves no case report.

Signs that it is going wrong: new symptoms after starting a remedy (yellow eyes or skin, dark urine, reduced urine, vomiting, rash, numbness or tingling, palpitations), a patient who is not improving within the time the tradition itself expects, and any claim that a remedy "cannot do harm". What to do then: stop the remedy, keep a sample of the material and the preparation, record dose and timing, give fluids if the patient can drink, and refer up the ladder.

How extraction maims

- Loss of trust: communities stop sharing, as Chiapas healers did after 1999. The harm is invisible and permanent.
- Loss of control: publication moves restricted knowledge into public view, as with Mountford's book. Once printed it cannot be recalled.
- Misrepresentation: inflating or inventing a traditional use (the Malagasy periwinkle story) or attributing to one people what belongs to many.
- Erasure: naming the plant and the scientist but not the people (Linnaeus's Countess, the 1993 smokebush statement).
- Spiritual and social harm to holders, which the holders, not the book, are entitled to judge.

How over-restriction harms

- Withholding safety information about a poisonous plant because its ritual use is restricted.

- Letting a gatekeeper's claim of secrecy block knowledge that a wider community has already shared.
- Dismissal disguised as respect: leaving out a tradition entirely so as not to "appropriate" it, which leaves readers with only the Western half of the evidence.

Red flags

These are signs, in a source or at the bedside, that a traditional remedy is being romanticised or extracted, and that a patient may be harmed.

In a source: - No Latin binomial, or a common name only. - No part, preparation or dose, or a dose "as needed". - No exclusions, or a claim of "no side effects". - No named people or place, only "the shamans" or "ancient wisdom". - A claim that the holders are extinct, vanished or unknown. - A traditional use that matches a modern market (weight loss, sexual performance, anti-ageing) better than any traditional need. - Material obtained from a secret ceremony, an initiated informant or a source who asked not to be named.

At the bedside, the illnesses where no traditional remedy should be allowed to delay what the district can give: signs of sepsis (fever with confusion, fast breathing, cold mottled skin), severe dehydration in a child, obstructed labour or bleeding in pregnancy, a hot swollen spreading wound, chest pain with breathlessness, sudden weakness of one side, a rigid abdomen, and any poisoning by a remedy. When nothing more can be done, a tradition's comfort practices (presence, touch, prayer, song, the company of kin) carry no pharmacological risk and may carry real value. Offering them at the end, if the patient wants them, is not romance.

The case against

The strongest case against this report's rules comes from four directions.

Against "biopiracy" as a frame. Jim Chen (2006) argued that biodiversity is information, that the biopiracy narrative misreads how value is created, and that ethnobiological knowledge does not deserve proprietary protection, with modest patent reform the better remedy (summaries read). Hayden (2003) showed, through a UNAM and Wyeth-Ayerst deal, how much relevant knowledge was already in markets and the public domain (description only). Most knowledge the book uses is public and shared, and treating every remedy as property would make it unwritable and would itself be a kind of romance.

Against the activists' framing. Vandana Shiva's *Biopiracy* (1997), the founding polemic, has been criticised for overstating the harms of biotechnology (reviews read). The usual periwinkle story is not supported by the record, and advocacy groups supplied many figures in the Maya ICBG and smokebush cases. Adopting the activist story uncritically is the same error as adopting the industry story.

Against consent requirements. Researchers argue that Nagoya-era rules slow non-commercial science and conservation. Some indigenous critics argue the reverse, that benefit sharing commodifies knowledge that should never have been for sale, and that the Wai 262 report (Waitangi Tribunal 2011) stopped short of Māori control by finding a guarantee of kaitiaki relationships rather than ownership (Te Waka Kai Ora criticism, summaries). Positions differ within and between communities.

Against restriction. Hindmarsh Island shows that restriction claims can be contested within a community, and that a book cannot test them. Critics of "secret knowledge" argue that it can protect power within a group as well as protect culture from outsiders.

Against the critique of the ecological Indian. Deloria, Ranco and others argue that Krech's argument has been used politically to deny indigenous land and resource claims. The danger in dismantling the noble healer is that the book swings to the colonial view that healers were frauds, which the Tohunga Suppression Act and the potlatch ban codified.

Where this leaves the book: old does not mean safe, and documented does not mean owned. The book should credit generously, test strictly, publish only what holders have chosen to share, and refuse both the romance and the dismissal.

10-line summary

1. Tradition is a real but imperfect guide: 80% of 122 plant-derived drugs had a matching traditional use, but screening trials show only a mixed advantage over random selection.
2. Traditional use never establishes safety: Aristolochia caused urothelial cancer in 46% of a Belgian surgical series, and 20% of Ayurvedic products in Boston contained metals.
3. Most documented harms came from translation (wrong species, preparation, purpose, person or dose), not from the tradition itself.
4. Biopiracy's main legal harm is the claim of exclusive rights over shared knowledge, and prior-art documentation defeated it for neem and turmeric.
5. Benefit sharing has delivered little money: about R500,000 to the San from Hoodia, against R12.2 million in the first year of the industry-wide rooibos levy.
6. Consent from individuals does not license collectively held knowledge, as the cancellation of the Maya ICBG in 2001 showed.
7. Colonial states used local knowledge and outlawed local healers, and the secrecy of some traditions is a scar of that suppression.
8. Restricted knowledge must not be published, but outsiders cannot judge contested restriction claims, so the book should not adjudicate them.
9. The Fall removes patents and permits but not the duties to ask, name, respect restrictions, show the holders, give back and keep the trail.
10. Credit costs nothing, protects trust, and is the only benefit the book can always share.

Open questions

- Whether ethnobotanical selection improves the chance of finding effective treatments for the conditions this book cares about (wounds, diarrhoea, fever, pain) has not been tested directly. The screening trials used laboratory assays, not patients.
- How much benefit-sharing money has reached communities worldwide under Nagoya. I found counts of permits but no audited money figure.
- Whether the WIPO genetic-resources treaty has reached its 15 ratifications by October 2026 [VERIFY].
- Whether the rooibos levy model has delivered R42.7 million by 2024, and whether it will be extended to processors' value [VERIFY].
- How to handle knowledge from a tradition whose holders cannot be reached after the Fall, especially when two branches of the same community disagree about restriction.
- How the book's own district record (the remedy register) should be governed: who owns the village's observations about a remedy taught by an outside healer.
- Whether the Tsimane' findings on knowledge change rather than erosion generalise to other peoples.

Sources to read in full

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At the bedside after the Fall

Household

Minimum viable version: a notebook. Every remedy learned from another person is written down the same day with the teacher's name and place, the plant's local and Latin names if known, the part, how it is prepared, how much, how often, for how long, who must not take it, and anything the teacher asked to keep private (which is then not written in the shared notebook at all). A pressed leaf goes with each plant. The household uses a remedy only as taught, never stronger, and never for a red-flag illness in place of getting help.

Needs to start: paper, pencil, a flower press or heavy book, the habit of asking "may I write this down, and how should I name you?"

First failure to expect: a remedy remembered by common name only, prepared from the wrong plant.

Village of 300

Minimum viable version: a village remedy book and a register. The lay healer holds the book. A remedy enters the book only after the person who taught it has agreed and has heard it read back. Each entry carries a credit line in the form the teacher chooses. The register records each use: date, patient, remedy, dose and outcome at one, three and seven days. Restricted knowledge stays with its holders and is not written in the village book. Once a year the healer reads the book aloud to the people who contributed and corrects it.

Needs to start: a bound book, a reference herbarium of pressed specimens for every plant in the book, a scale, a microscope if salvaged, and a list of red-flag illnesses that always go to the district.

First failure to expect: a dispute about credit, or a remedy shared by one healer that another family considers theirs.

District of 3,000

Minimum viable version: a district provenance register and an outcomes review. The infirmary keeps a master copy of each village book with its sources. Twice a year the nurse or doctor compares outcomes for the same remedy across villages, retires remedies that are doing harm, and promotes those that show consistent benefit. The district brokers agreements between communities on what is shared, and keeps a short list of plants that must never be used (poison list) with warnings that do not reveal any restricted use.

Needs to start: a literate clerk, a sterile room for comparison of wound treatments, a council of tradition holders that meets at least once a year, and the habit of alternate allocation when two remedies are both in use for the same complaint.

First failure to expect: the romance returns through success. A remedy that helped a few people becomes a cure-all, is used for red-flag illnesses, and someone dies of delay.

Protocols

These protocols set rules for this book's treatment of indigenous and traditional material. The timings and numbers are working rules chosen for this book, not findings from the literature, and are marked as such.

Protocol A. Receiving a remedy from a holder

1. Before the teaching, ask: "May I write this down? Who else should agree? How do you want to be named?" Record the answers.
2. If the holder says the knowledge belongs to a family, clan, society or gender, ask who must agree. Do not record until they have. If they cannot be reached, do not record.
3. Record, the same day (working rule):
    - teacher's name or chosen credit, community, place and date
    - plant local name, Latin binomial if known, and part used
    - how it is collected (season, time, place)
    - preparation step by step, with quantities in the teacher's units and in grams or millilitres where a scale exists
    - dose, frequency and duration
    - who must not receive it
    - signs it is working, signs it is harming, and what the teacher does if it fails
4. Press a specimen of the plant within 24 hours (working rule) and label it with the same entry number.
5. Read the entry back to the teacher within 7 days (working rule) and correct it.
6. Ask what the teacher would like in return: copies of the book, help with harvest, seed, work, or nothing. Record and honour it.
7. If at any point the teacher withdraws consent, remove the entry from the shared book and say so to the teacher.

Protocol B. Testing a traditional remedy before it enters the village book

1. Identity: confirm the plant against the pressed specimen. If the Latin name is uncertain, write "identity unconfirmed" in the entry. Never use a remedy by common name alone.
2. Sources: look for at least two independent sources for the use, dose and exclusions, one of which should be from the tradition itself (working rule from the book's research standard). If only one exists, mark the entry grade D.
3. Toxicity: check the plant and its lookalikes against the district poison list. If either is on it, the remedy does not enter the book unless the district approves.
4. Exclusions: unless a source explicitly says otherwise, exclude pregnant and breastfeeding women, children under 2 years, and people with kidney or liver disease (working rule, precautionary).
5. Trial use: the first 10 uses (working rule) are recorded in the register with outcomes at 1, 3 and 7 days.
6. Review: after 10 uses, the healer and, where possible, the teacher review the outcomes. Keep, modify or retire.

Protocol C. Writing a remedy entry for the book

1. Lead with the plant: Latin binomial, family, local names, part used, lookalikes.
2. Credit: "Taught by [name or chosen credit], [people or community], [place], [year]", or for published sources, "As recorded by [community or authors] in [work, year]". Name the tradition as a living practice, not "ancient wisdom".
3. Separate three things in every entry: what the tradition says it does, what the record shows it did, what modern science infers. Grade the evidence A to D or X.
4. Give the preparation exactly as taught. Do not concentrate, combine or substitute.
5. Give exclusions and danger signs in plain words.

6. Never write “safe”, “natural”, “gentle”, “no side effects”, “ancient secret”, “shamanic” or “miracle”.
7. Never write “primitive”, “superstition”, “folk belief” or “old wives’ tale” for a practice under discussion. Describe what is done and what is known.
8. Where a tradition has restricted knowledge in the domain, write one sentence saying so and naming the custodians if they wish, and nothing more.
9. Do not claim the remedy as the book’s own or as the property of any one tradition when it is widely shared. Say “used in [traditions A, B and C]”.

Protocol D. When knowledge is said to be restricted

1. Stop recording.
2. Do not ask what the restricted content is, or how it might be obtained.
3. Do not judge whether the restriction is genuine. If members of one community disagree, record nothing restricted and let them settle it.
4. If the plant concerned is poisonous, warn readers about the plant from toxicological sources without describing the restricted use.
5. If restricted material has already been published by outsiders without consent, do not republish it, even if available.
6. Record that a restriction was claimed, by whom and when, in the district provenance register (not in the shared book).

Protocol E. Giving back

1. Each contributor receives a copy of their entries and, where possible, of the whole book.
2. Once a year (working rule), read the village book aloud to contributors and correct it.
3. Return a share of any harvest, seed or cultivated stock of the plant to the teacher’s household.
4. If the book is reprinted or distributed beyond the district, ask contributors again.

Numbers to carry

1. 80%: share of 122 plant-derived drugs whose source plant had a matching traditional use (Fabricant and Farnsworth 2001). Tradition is a signal.
2. 46%: urothelial carcinoma in 18 of 39 Belgian patients who took a slimming remedy with the wrong “fang ji” (Nortier 2000). A common name can kill.
3. 20%: Ayurvedic products bought in Boston that contained lead, mercury or arsenic, 14 of 70 (Saper 2004). Old does not mean clean.
4. 2: the minimum number of independent sources for any dose, recipe or plant identification in this book (book’s research standard).
5. 6% and R500,000: the San’s share of CSIR Hoodia royalties, and what it had paid them by 2010 (Makoni 2010). Benefit sharing rarely pays.
6. 1.5%: the rooibos levy on the farm-gate price, which paid R12.2 million in its first year (Government of South Africa 2022). Industry-wide beats single-product.
7. 17: the principles of the ISE Code of Ethics, reducible to six duties: ask, name, respect restrictions, show the holders, give back, keep the trail.
8. 1907 to 1962: the life of the Tohunga Suppression Act. Secrecy is often the scar of suppression.
9. 4 to 5 days: the retting time that makes bitter cassava safe in Central African practice, and shortening it causes konzo (ANU Konzo Prevention Unit). A tradition’s method is part of its safety.

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