

Digging for Gold in Kautilya's Arthasastra

Dr. N. Kannan¹, Mrs. C. Saraswathi Murali²

¹Professor & Head, ²Research Scholar,

^{1,2}Department of Oriental Studies and Research, SASTRA Deemed to be University, Thanjavur, Tamil Nadu, India

ABSTRACT

Apart from political and military aspects, Kautilya's Arthasastra has elaborately discussed finer dimensions of the economy such as gold and other commodities. This paper delves into the insights offered by this ancient Sanskrit text about gold.

KEYWORDS: Gold, Kautilya, Arthasastra, mining

How to cite this paper: Dr. N. Kannan | Mrs. C. Saraswathi Murali "Digging for Gold in Kautilya's Arthasastra"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-2, February 2021, pp.1026-1029, URL: www.ijtsrd.com/papers/ijtsrd38573.pdf



Copyright © 2021 by author (s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



INTRODUCTION

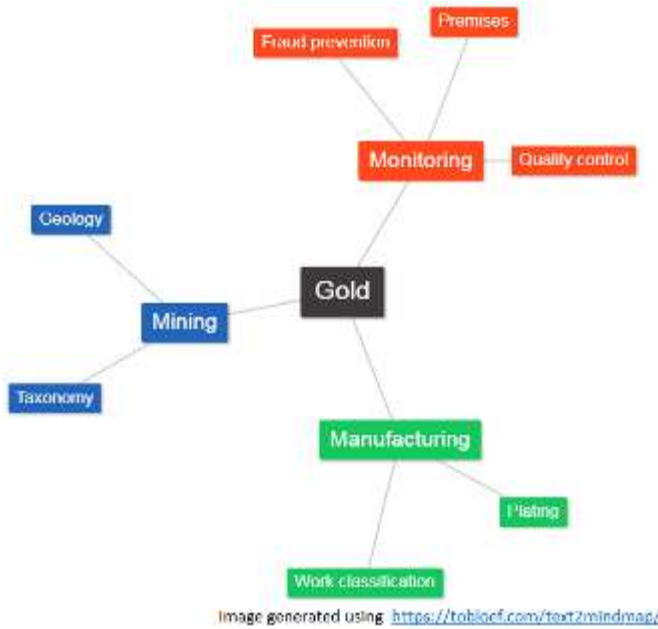
In a world beset with problems ranging from military coup to mutating virus, what can give us solace is the vast heritage of Indian wisdom, encoded in Sanskrit literature. It would be delusory to think of adding to or subtracting from this legacy. As reminds Shakespeare, in *King John*, "To gild refined gold, to paint the lily, to throw a perfume on the violet, to smooth the ice, or add another hue unto the rainbow, or with taper-light to seek the beauteous eye of heaven to garnish, is wasteful and ridiculous excess." A saner exercise would be to look for hoary insights of relevance to contemporary issues, as we can richly perform in the two-thousand-plus-year-old *Arthasāstra* of *Kautilya*. Written as an instruction manual for the king, by the kingmaker *Cāṇakya*, the text, of course, deals with politics and defence, forts and foes, but has besides many economic lessons for today's seeker. Metaphorically digging for gold in *Arthasāstra*, one does find the tome replete with statements about the literal gold.

Gold, its importance

The yellow metal *Aurum* that adorns the winner in the form of gold medal in the Nobel awards or the Olympic Games has long had a pride of place in our scriptures. *Tiruvalluvar*, writing more than two thousand years ago, compares the growing brilliance of those who endure austerities to the increase in the shine of gold as it undergoes accelerated

heating. The royal seal was often the golden ring, as a high-level password. For instance, in one of the poignant *Sundara Kādam* moments, *Hanumān* gives *Sītā* the ring (*aṅguliyaḥ*) with *Rāma's* name inscribed on it. Gold has traditionally been a crown gift as also a symbol of prosperity. The skilled architect *Maya*, in the *Mahābhārata*, brings from his hidden treasure near the mountains of *Mainaka*, a fierce club with golden knobs as a gift for *Bhīma*; the peerless palace built by *Maya* for the *Pāṇḍavas* had columns of gold. *Rgveda* describes the wealthy *Sindhu* region as being rich in good steeds, robes, and gold.

Income in gold (*hiranyōpāyanam*) is conducive to financial prosperity of the kingdom, says *Kautilya* (Book.Chapter.Statement-2.8.3). Understandably, therefore, in the daily routine of the king, according to *Arthasāstra*, receiving revenue in gold (*hiranya*) is prescribed to be performed in the fourth *nālika* (1.19.12). *Kautilya* devotes a section to the superintendent of gold in the workshop (*suvarṇa adhyakṣaḥ*), in Book two, on heads of departments; another section is titled 'activity of the goldsmith in the market highway' (*sauvarṇika pracārah*). This paper studies the references to gold in *Arthasāstra*, under threebroad heads, viz., mining, manufacturing, and monitoring, as depicted in the chart.



A. Mining

1. **Geology:** In India, HGML is the only public sector company producing gold, with mines in Hutti, Uti and Hirabuddini in Raichur district, informs the yearbook of the Indian Bureau of Mines (IBM): "By States, the largest resources in terms of gold ore (primary) are located in Bihar (44%) followed by Rajasthan (25%), Karnataka (21%), West Bengal (3%), Andhra Pradesh (3%), Jharkhand (2%)." Traditional understanding of geology comes forth in how *Kautilya* prospects for different types of gold.

मूलम् - पर्वतानाम् अभिज्ञात-उद्देशानां बिल-गुह-उपत्यका-आलय-निगूढखातेषु अन्तःप्रस्यन्दिनो जम्बू-चूत-ताळ-फलपक्व-हरिद्राभेद-हरिताळ-क्षौद्र-हिङ्गळुक-पुण्डरीक-शुक-मयूर-पत्रवर्णाः सवर्णोदक-ओषधीपर्यन्ताः चिक्कणा विशदा भारिकाश्च रसाः काञ्चनिकाः॥ (कौटिलीयम् अर्थशास्त्रम् 2.12.2).

Transliteration - *Parvatānām abhijñāta-uddeśānām bilagūha-upatyakā-ālaya-nigūḍhakhāteṣu antaḥprasyandino jambū-cūta-tāḷa-phalapakva-haridrābheda-haritāḷa-kṣaudrahiṅgaḷuka-puṇḍarika-śuka-mayūra-patravarṇāḥ savarṇodaka-oṣadhīpariyantāḥ cikkaṇā viśadā bhārikāśca rasāḥ kāñcanikāḥ* // (2.12.2).

Meaning - Gold-bearing liquids flow inside a hole, pits, caves, slopes or deep excavations of mountains known to contain gold ore; these tend to be viscous, clear and heavy, and have the colour of the rose-apple, mango, palm-fruit, ripe turmeric, jaggery, honey, vermillion, white lotus, orpiment, red arsenic, feather of parrot or peacock. These are adjacent to water or shrubs of similar colour (*Kautiliyam arthaśāstram* 2.12.2).

Bitumen (*śilājatu*) could look deceptively alike, but be pungent, in smell and taste (*ugra gandha rasam*) (2.12.4).

Ahead of much of the world, there was awareness during *Kautilya's* times, of which ore could be suitable for optimal alloy-making (*veddhāraḥ*). Again, unlike many who pursued alchemy to magically convert base metals to gold, the pragmatic *Kautilya* focused on alloys and plating as solutions to gold-ification, and identified the minerals fit for the purpose.

मूलम् - अप्सु निष्टयूताः तैलवद् विसर्पिणः पङ्क-मल-ग्राहिणश्च ताम्ररूप्ययोः शताद् उपरिवेद्धारः॥ (कौटिलीयम् अर्थशास्त्रम् 2.12.3).

Transliteration - *Apsu niṣṭyūtāḥ tailavad visarpiṇaḥ paṅka-mala-grāhiṇaśca tāmrarūpyayoḥ śatād upariveddhāraḥ* (*Kautiliyam arthaśāstram* 2.12.3).

Meaning - "(If, when) thrown in water, they spread on the surface like oil and absorb mud and dirt, they are capable of transmuting copper and silver up to one hundred (times their own weight)" (*Kautiliyam arthaśāstram* 2.12.3).

मूलम् - पीतकाः ताम्रकाः ताम्रपीतका वा भूमिभस्तरधातवो भिन्ना नीलराजीवन्तो मुद्ग-माष-कृसरवर्णा वा दधि-बिन्दु-पिण्डचित्रा हरिद्रा हरीतकी-पद्मपत्र-शैवल-यकृत्प्लीहानवधवर्णा भिन्नाः चुञ्चु-वालुका-लेखाबिन्दु-स्वस्तिकवन्तः सगुळिका अर्चिष्मन्तः ताप्यमाना न भिद्यन्ते बहुफेनधूमाश्च सुवर्णधातवः प्रतीवापार्थाः ताम्ररूप्यवेधनाः। (कौटिलीयम् अर्थशास्त्रम् 2.12.5).

Transliteration - *Pitakāḥ tāmrakāḥ tāmrāpitakā vā bhūmibhastaradhātavo bhinnā nīlarājīvanto mudga-māṣa-kṛsaravarṇā vā dadhi-bindu-piṇḍacitrā haridrā haritākī-padmāpatra-śaivala-yakṛtphliṇānavadhavarṇā bhinnāḥ cuñcu-vālukā-lekhābindu-svastikavantaḥ saguḷikā arcīṣmantaḥ tāpyamānā na bhidyante bahuphenadhūmāśca suvarṇadhātavaḥ pratīvāpārthāḥ tāmrarūpyavedhanāḥ*. (*Kautiliyam arthaśāstram* 2.12.5).

Meaning - "Ores in earth or rocks, which are yellow or copper-coloured or reddish-yellow, which, when broken, show blue lines or are of the colour of the *mudga* or *māṣa* bean or *kysara*, which are variegated with spots or lumps as of curds, which are of the colour of turmeric or *myrobalan* or lotus-leaf or moss or liver or spleen or saffron, which, when broken, show lines, spots or *svastikas* of fine sand, which are possessed of pebbles and are lustrous, which, when heated, do not break and yield plenty of foam and smoke, are gold-ores, to be used for insertion, as transmuters of copper and silver" (*Kautiliyam arthaśāstram* 2.12.5).

2. **Taxonomy:** *Kautilya* describes the different types of gold, depending on source.

मूलम् - जाम्बूनदं शातकुम्भं हाटकं चैणवशृङ्ग-शुक्तिजं जातरूपं रसविद्धम् आकरोद्रतं च सुवर्णम्॥ (कौटिलीयम् अर्थशास्त्रम् 2.13.3).

Transliteration - *Jāmbūnadaṃ śatakumbhaṃ hātakam cainaśrṅga-śuktijaṃ jātarūpaṃ rasavidham ākarodratam ca suvarṇam*.

(*Kautiliyam arthaśāstram* 2.13.3).

Meaning - "That from the *Jambū* river, that from (Mt.) *Satakumbha*, that from *Hātaka*, that from *Veṇu*, that produced in *Śrṅgaśukti*, that found in a natural condition, that transmuted by means of liquids and that produced from mines, - these are (types of) gold" (*Kautiliyam arthaśāstram* 2.13.3).

Rasa is not to be misinterpreted as a reference to alchemy, considering that *Kautilya* frowned upon counterfeit gold; for example, the section on keeping watch over artisans, in Book four titled, "The suppression of criminals," stipulates stiff penalties for mixture of base metals and enhancement of colour (4.1.30-31).

Another classification of gold is based on quality.

मूलम् - किञ्जल्कवर्णं मृदुस्निग्धम् अनादिभ्राजिष्णु च श्रेष्ठम् , रक्तपीतकं मध्यमम् , रक्तमवरम्॥ (कौटिलीयम् अर्थशास्त्रम् 2.13.4).

Transliteration - *Kiñjalkavarṇam mṛdusnigdham anādibhrājiṣṇu ca śreṣṭham , raktapītakam madhyamam , raktamavaram.. (Kauṭīliyam arthaśāstram 2.13.4).*

Meaning - The best quality gold has the colour of lotus petals, is soft and smooth, glittering, and not producing sound; reddish yellow gold is of medium quality, and gold that is red in colour is at the bottom of the quality scale.

(*Kauṭīliyam arthaśāstram 2.13.4).*

B. Manufacturing

1. **Work classification:** *Kauṭīliya* specifies three types of work, as regards gold jewellery manufacturing.

मूलम् - क्षेपणो गुणः क्षुद्रकमिति कर्माणि॥ (कौटिलीयम् अर्थशास्त्रम् 2.13.37).

Transliteration - *kṣepaṇo guṇaḥ kṣudrakamiti karmāṇi (Kauṭīliyam arthaśāstram 2.13.37).*

Meaning - Ornamental work is of three types, viz., setting, stringing, and ordinary (2.13.37). Description of each of these is given in the following table:

Work	Description	Sanskrit	Ref
Setting	Fixing beads in gold,	<i>kṣepaṇa</i>	2.13.38
Stringing	Making of string or thread	<i>guṇa</i>	2.13.39
Ordinary	Solid (<i>ghana</i>) or hollow (<i>suṣira</i>) work, or bead work (<i>prṣata</i>)	<i>kṣudrakam</i>	2.13.40

As in many occasions in *Arthaśāstra*, *Kauṭīliya* drills down to details. For instance, he elaborates that, in the setting work, the ratio of gold used for fastening at the base and side should be 2:1. In the case of bead-fixing, the ratio could be 2:3 or 4:3. *Kauṭīliya* instructs goldsmiths to guard against artificial gold (*saṃskṛtakam*), with silver constituting one-fourth (*rūpyapādayuktam*) (2.13.41-43).

Assisted by artisans in the workshop, the goldsmith worked for the citizens, too, indicating the level of affluence in those times enabling individuals and households to own gold. The goldsmith was required to be well-versed in the knowledge about gold, its characteristics, and ornament manufacturing process.

Kauṭīliya defines aesthetically what makes an ornament excellent.

मूलम् -

समरासमद्वन्द्वम् असक्तपतं स्थिरम्।

सुप्रभृष्टम् असंपीतं विभक्तं धारणे सुखम्॥

अभिनीतं प्रभायुक्तं संस्थानमधुरे समम्।

मनोनेत्राभिरामं च तपनीयगुणाः स्मृताः॥ (कौटिलीयम् अर्थशास्त्रम् 2.13.60-61).

Transliteration -

Samarāsamadvandvam asaktapataṃ sthiram /

Suprabhrṣṭam asaṃpītaṃ vibhaktaṃ dhāraṇe sukham //

Abhinītaṃ prabhāyuktaṃ saṃsthānamadhure samam /

Manonetrābhirāmaṃ ca tapanīyaguṇāḥ smṛtāḥ //

(*Kauṭīliyam Arthaśāstram 2.13.60-61).*

Meaning - "Of an even colour, symmetrical, with beads not sticking to each other, firm, well-burnished, not soaked (for a false glitter), divided (into suitable parts), pleasant to wear, not gaudy, full of lustre, with a charming shape, even, and pleasing to the mind and eye, - these are declared to be the excellent qualities of an ornament" (*Kauṭīliyam Arthaśāstram 2.13.60-61).*

2. **Plating:** Though oblivious to the international scientific community (such as seen in the papers on gold platingⁱⁱ from The Electrochemical Society with Nobel laureates among its members and authors), *Arthaśāstra* gives evidence that India was a pioneer in gold plating.

In a section titled, "The activity of the goldsmith in the market highway," *Kauṭīliya* defines an artisan's work as that of including plating, apart from making both solid and hollow objects, coating, fixing and gilding (2.14.17). Proportions to be used by the gold-plater (*tvaṣṭṛ karmanah*) are prescribed thus: Gold quantity has to be equal and half, respectively, for copper and silver (2.13.44-45). In the case of the latter, an alternative proportion is a quarter part of gold, gilded using vermilion powder or liquid.

A colour-mapping for gold is attempted in the following table, using inputs from *Arthaśāstra*:

Ingredients	Outcome	Sanskrit	Ref
Best quality ornamental gold with equal amount of lead, heated and transformed into leaves and brightened with Indus-earth	Base for colours such as of parrot-feather, as well as blue, yellow, white, and green	<i>Nīla pīta śveta harita śukapatra varṇānām</i>	2.13.47
Ornamental gold and white silver in the ratio of 3:32	White-red	<i>Śveta-lohitakam</i>	2.13.51
Copper instead of white silver in the above mix	Yellow	<i>pītakam</i>	2.13.52
Colouring as one-third in the mix	Yellowish red	<i>pītarāgam</i>	2.13.53
Ornamental gold and white silver in the ratio of 1:2	Colour of green gram (<i>mudga</i>)	<i>Mudga-varṇam</i>	2.13.54
Ornamental gold smeared with black iron (<i>kālāyasa</i>) as half part	Black	<i>kṛṣṇam</i>	2.13.55
Ornamental gold dipped twice in solution (<i>pratilapina rasam</i>)	Colour of parrot feather	<i>Śukapatra-varṇam</i>	2.13.56

C. Monitoring

1. **Premises:** Layout of the workshop, and the rigour to be followed by the superintendent of gold within the premises are enunciated in *Arthaśāstra*.

मूलम् – सुवर्णाध्यक्षः सुवर्ण-रजत-कर्मान्तानाम् असंबन्धावेशन-चतुःशालाम् एकद्वाराम् अक्षशालां कारयेत्॥ (कौटिलीयम् अर्थशास्त्रम् 2.13.1).

Transliteration – *suvarṇādhyakṣaḥ suvarṇa-rajata-karmāntānām asambandhāveśana-catuhśālām ekadvārām akṣaśālām kārayet* (*Kauṭīliyam Arthaśāstram* 2.13.1).

Meaning – Workshop should have a single door for access, and a courtyard with four halls devoid of inter-communication (*Kauṭīliyam Arthaśāstram* 2.13.1).

Unauthorised entry invites capital punishment (*ucchedyaḥ*). Entering with precious metals is forbidden even for the officers and the penalty is the forfeiting of the same. Thorough frisking is mandated for everyone, both at the time of entry and exit.

Tools and unfinished work should remain in the workshop. Gold received and ornamental work-in-progress are to be deposited in the office; at the time of depositing, seals are to be marked by the artisan and the superintendent (*Kauṭīliyam Arthaśāstram* 2.13.30-36).

2. **Quality control:** *Arthaśāstra* guides the superintendent in purification process and quality testing. Use of touchstone is also explained (*Kauṭīliyam Arthaśāstram* 2.13.17). Guidance has to be taken also from the statements on weights and measures (*Kauṭīliyam Arthaśāstram* Chapter 19 in Book 2). The standard for quality control is one *suvarṇa* of turmeric-coloured pure gold (*Kauṭīliyam Arthaśāstram* 2.13.15). The ancient measure of *suvarṇa* (or *karṣa*) is equal to sixteen *māśakas*, each in turn equivalent to ten *māśa* beans (green gram) (*Kauṭīliyam Arthaśāstram* 2.19.2-3). (The metric measure gram is said to be approximately equivalent to 1.026 *māśakas*ⁱⁱⁱ; if so, today's gold sovereigns weighing 7.98g may be around half of *suvarṇa*.)

Indications	Inference	Action	Ref
Gold pale yellow or white in colour	Gold is impure	Remove impurity using four parts of lead; use dried cow-dung (<i>śuṣka paṭala</i>), and oil mix (<i>tailagomaya</i>), to handle brittleness	2.13.5-8
Gold from mines is brittle because of lead mix	Gold requires purification	Pound on wooden anvils, dip in pulp made from the roots of plantain and <i>antiquorum</i> (<i>kadalī vajra</i>)	2.13.9

3. **Fraud prevention:** The hawk-eyed *Kauṭilya*, who had catalogued forty types of embezzlement by officers (2.8.21), goes into specifics when dealing with gold, listing five types of frauds by artisans (2.14.18), and four ways of stealing when examining new articles or repairing the old ones (2.14.44). Here is a snapshot of the many statements dealing with gold-related frauds.

Modus operandi	Description	Ref
Fraud in the balance (<i>tulā viśamam</i>)	Defective scales, bad strings, use of magnets	2.14.19
Removal (<i>apasāraṇam</i>)	Substituting gold with silver and/or copper (<i>tripuṭaka</i> , <i>vellaka</i>)	2.14.21
Tapping or dropping (<i>visrāvaṇam</i>)	Interchanging gold article and silver/ iron article	2.14.25
Boxing, folding or enclosing (<i>peṭakaḥ</i>)	Enclosing of base metal with precious metal, when soldering	2.14.33
Embedding or confounding (<i>piṅkaśaḥ</i>)	Use of mud mixed with gold in hollow or solid articles	2.14.34
Knocking off or hammering	Removing a bead, string or casing	2.14.45
Cutting out	Cutting out the interior in a double base article	2.14.46
Scratching out	Using a sharp tool to scratch solid objects	2.14.47
Rubbing off	Wiping with a cloth containing arsenic powder	2.14.48

Conclusion

The ageless work of *Kauṭilya* never fails to disappoint a seeker of knowledge on a wide variety of topics. What is needed is a greater awareness of the treasures hidden in *Arthaśāstra* on otherwise mundane topics such as gold and ornaments. Also urgently imperative is the support of Indian scientific community in gaining the overdue acknowledgement in international forums of our ancient practices and techniques, be it in mining or metallurgy.

Bibliography

- [1] R. P. Kangle, *The Kauṭīliya Arthaśāstra* Parts I, II, & III, Motilal Banarsidass, New Delhi, 2014
- [2] *Kauṭilya's Arthaśāstra*, translated into English by R. Shama sastry, Chaukhamba Surbharti Prakashan, Varanasi, 2014

ⁱhttps://ibm.gov.in/writereaddata/files/03202018145720Gold_AR_2017.pdf

ⁱⁱhttps://www.electrochem.org/dl/interface/sum/sum13/sum13_p036_038.pdf

ⁱⁱⁱhttps://insa.nic.in/writereaddata/UpLoadedFiles/IJHS/Vol19_1_3_SAParamhans.pdf