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Indian principal-agent theory, or, how Varuṇa helps the king to be just

Abstract:
Economic principal-agent theory deals with asymmetric information. It has two aspects. (i) If one person is better informed than another one, the former may outwit the latter. *Kauṭilya*, the *Arthaśāstra*'s author, and other *artha* or *dharma* authors had a very good understanding of outwitting. (ii) Economic theory teaches that the person in command of superior knowledge may not always be able to benefit from this knowledge. He may need the uninformed side to agree to some mutually beneficial venture. The very fact of asymmetric information may then harm also the informed side. Judging from the literature surveyed by the author, the *artha* and *dharma* literature had no explicit (openly expressed) understanding of this second aspect. In the author's mind, this discussion is related to the "*Varuṇa* rule". This rule (specified in the *Manusmṛti*) stipulates that the king is to throw confiscated property into water. We explain this apparent waste of resources as an implicit solution to the second aspect of principal-agent theory mentioned above.

Keywords: asymmetric information, trust, outwitting problem, gains-from-trade problem, *Varuṇa* rule

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I. Introduction

Old Indian texts exhibit an amazingly clever perspective on human agency.[2] Within economics, this is dealt with under the heading of principal-agent theory. Roughly speaking, principal-agent theory deals with the problems that arise from asymmetric information, with one person being better informed than another one. In recent times, economists have given due credit to *Kauṭilya*, the *Arthaśāstra*'s author, as a very early principal-agent theorist.[3]

Principal-agent theory is concerned with two closely related problems. The "outwitting problem" is about tricks to gain the upper hand over some other person and about tricks to prevent being cheated oneself. It seems clear that *Kauṭilya* and other *artha* or *dharma* authors had a very good understanding of this problem. One should make clear at the outset that words like "cheating", "honest behaviour" or the like do not necessarily imply a moral judgement, neither on the part of the Old Indian authors nor on the part of the present one.

Economic principal-agent theory is also about another aspect of asymmetric information. The person in command of superior knowledge may not always be able to benefit from this knowledge. Indeed, if he needs the uninformed side to agree to some mutually beneficial venture, asymmetric information may harm the informed side by preventing this venture. We call this the "gains-from-trade problem" of principal-agent theory. We conjecture that there was no explicit (openly expressed) understanding of the gains-from-trade problem in Old India. Of course, this is difficult to prove; a text dealing with the gains-from-trade problem might just have escaped our attention.

In any case, a society's "understanding" of a problem or a solution to that problem need not always be present in an explicit manner. Hayek[4] has stressed that useful institutions (such as markets or specific judicial rules) are often not invented or not even fully understood by us humans. Instead, they spontaneously develop and are kept if they prove useful. In this sense, institutions may embody "intelligent" solutions. We think that the "*Varuṇa* rule" specified in the *Manusmṛti* is a suitable illustration of such implicit understanding. The "*Varuṇa* rule" stipulates that the king is to throw confiscated property into water. This apparent waste of resources calls out for an explanation. One may ask why it is *Varuṇa* who is mentioned in relation to throwing confiscated property into water. Simply, because in post-vedic times, *Varuṇa* is the God of Water.[5]

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[2] This has already been noted by Zimmer (1969: 89) who observes, in the context of Indian fables, that Indian political thought was characterized by "cold-blooded cynical realism and sophistication".

[3] See Brockhoff 2015 and Sihag 2007. In a series of papers, Sihag has highlighted *Kauṭilya*'s achievements in other parts of economics, also. A summary of his efforts is Sihag (2014).

[4] Hayek 1973: 8–34.

[5] See Washburn Hopkins (1915, pp. 116-122) and Lüders (1951).

The paper is structured as follows. In section II, we explain the two problems of principal-agent theory in detail. We then turn to the outwitting problem in section III. The gains-from-trade problem is addressed in section IV. Section V concludes.

II. Principal-agent theory

It may seem obvious that a person A who possesses some relevant information not available to another person P stands to benefit from this superior knowledge. Relatedly, a person A who cheats another person P will typically profit from that action. This is certainly the idea behind some part of the Old Indian *artha* literature, *Kauṭilya*'s *Arthaśāstra* (KAŚ) as well as the fable collections *Pañcatantra* and *Hitopadeśa*.

This discussion forms one important branch of economic theory, called principal-agent theory. It deals with situations where an economic actor, called the "principal", wants another actor, the "agent", to perform certain actions.[6] The agent knows about his actions while the principal does not. This state of affairs is called "asymmetric information".[7]

A big chunk of principal-agent theory is concerned with "hidden action" problems. Consider the example of a firm (the principal) that has employed a worker (the agent) who may diligently work in the principal's interest or pursue his own interests instead. If and insofar the principal cannot observe the effort exerted by the agent, the principal's problem is how to supervise or remunerate the worker so that the interests of the latter are aligned with those of the former. We term this the "outwitting problem" of principal-agent theory. The agent tries to outwit the principal: he aspires a high reward without effort. The principal tries not to be outwitted: he wants to make the agent work hard for as little remuneration as possible.

Consider figure 1. The agent (denoted by A) moves first. He may try to outwit the principal and earn S_A while the principal would suffer and obtain the negative payoff of $-S_P$. S may stand for "stealing" or "scam" and there is no harm in assuming $S_A = S_P$. The dishonest agent be punished with a fine F. Thus, if the principal is carefree (does not check whether he is taken advantage of), the payoffs are $-S_P$ for the principal and $S_A - F$ for the agent. If, however, the principal is attentive (or careful), he can prevent being outwitted. Then, the cost C of being careful has to be borne by him, while the agent suffers the fine and does not profit

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[6] A second branch of principal-agent theory (called adverse selection) deals with a principal who wants the agent to reveal information held by the agent. See the conclusion.

[7] Textbook presentations of principal-agent theory are Campbell 2006 and Rasmusen 2006. On two-level structures, see Tirole 1986.

from his cheating attempt. In contrast, an honest agent strives for a mutually beneficial deal that yields some gain G_A to him and the gain G_P to the principal.
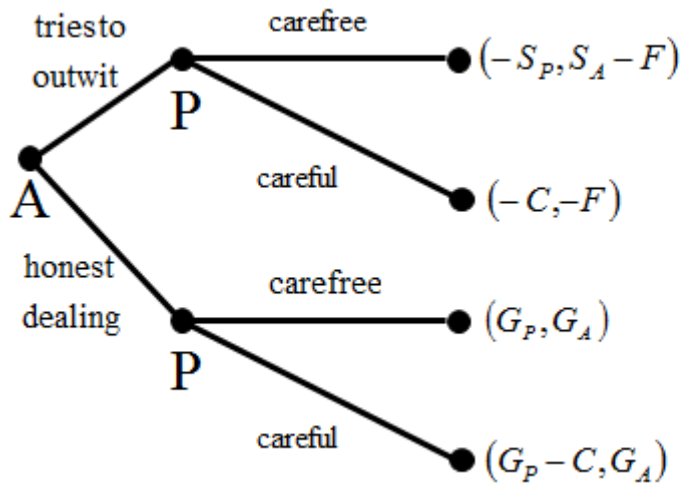

Figure 1: The outwitting problem for perfect information

We assume that all parameters are positive and also $S_A > C$ and $S_P > C$. Figure 1 rests one the premise that the principal knows whether the agent tries to outwit him or not. If the agent is not honest (i.e., tries to outwit the principal), the latter will be careful by $S_P > C$. In contrast, the honest agent can expect a carefree principal by $C > 0$. Therefore, the agent prefers to be honest and the agents obtain their gains G_P and G_A, respectively. [8]

We now turn to Figure 2 and the case of imperfect information. The principal (who chooses between carefree and careful behaviour) does not know whether the agent is honest (aspiring the mutual gains) or tries to outwit (going after the scam payoff S_A). Instead, with some probability ω the agent tries to outwit the principal and with probability $1 − ω$ the agent is honest. [9] This probability is known to the principal.

Then, the principal is carefree if his expected payoff for carefree behaviour is at least as large as his expected payoff for careful behaviour, i.e., if

$$\omega(-S_P) + (1 - \omega)G_P \geq \omega(-C) + (1 - \omega)(G_P - C)$$

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[8] The game-theoretic solution procedure described for the analysis of Figure 1 is called 'backward induction' (see, for example, Gibbons 1992: 55–61).
[9] Again, we apply backward induction, this time with a probability for trying to outwit. One may think of Abraham Lincoln's famous quote: "You can fool all the people some of the time, and some of the people all the time, but you cannot fool all the people all the time." From a purist point of view, one may argue that we do not have imperfect information here. Indeed, the standard procedure in principal-agent theory would assume "information partitions" where the principal's one is coarser than the agent's one. However, for the purpose of this paper, there is no need to go into these game-theoretic details.

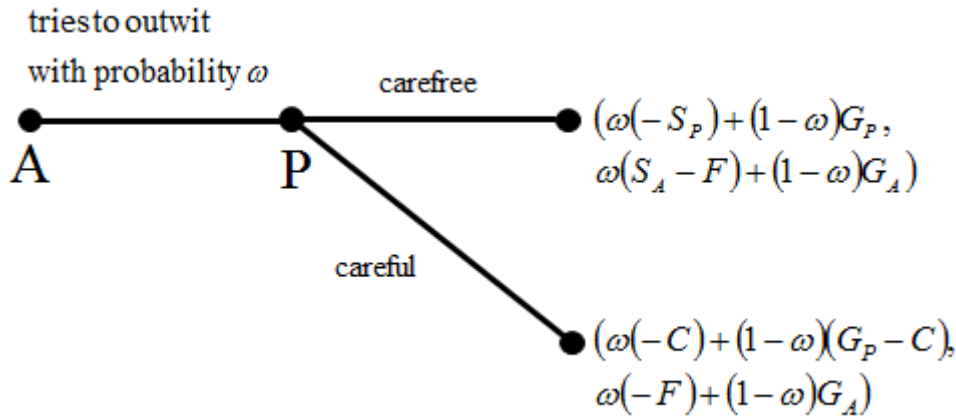or, equivalently, $\omega \le \dfrac{C}{S_P}$ hold.

Figure 2: The outwitting problem for imperfect information

We now turn to the agent's best outwitting probability. Clearly, it is never optimal for the agent to choose an outwitting probability that makes the principal careful. Then, the agent would not obtain $S_A - F$. Therefore, we can focus on a carefree principal and the agent's expected payoff

$$\omega(S_A - F) + (1 - \omega)G_A$$

In order to find the agent's best decision, we need to distinguish between two situations. We either have a relatively small fine $F < S_A - G_A$ or a relatively large fine $F > S_A - G_A$. In the small-fine situation (where $S_A - F > G_A$ holds), the agent chooses the maximal outwitting probability that keeps the principal carefree:

$$\hat{\omega} = \frac{C}{S_P}$$

Then, the payoffs are $\hat{\omega}(-S_P) + (1 - \hat{\omega})G_P$ for the principal and $\hat{\omega}(S_A - F) + (1 - \hat{\omega})G_A > G_A$ for the agent.

If the fine is relatively large,

$$\hat{\omega} = 0$$

is best for the agent. The payoffs are G_P and G_A, respectively.

At a first glance, imperfect information seems a problem only for the uninformed side (the principal). In fact, however, the possibility of outwitting may quickly turn into a problem for the informed side (the agent), also. After all, the principal might shy away from dealing with the agent and thus prevent a mutually benefical arrangement. Thus, there is a related "gains-from-trade problem": How can a hard-working agent convince the principal that he, indeed, is very useful so that the principal is prepared to pay a high wage or to employ him at all?

We analyse this with the help of Figure 3. Here, the principal has the choice of entering into a contractual agreement with the agent. If he does not, he obtains a zero payoff.
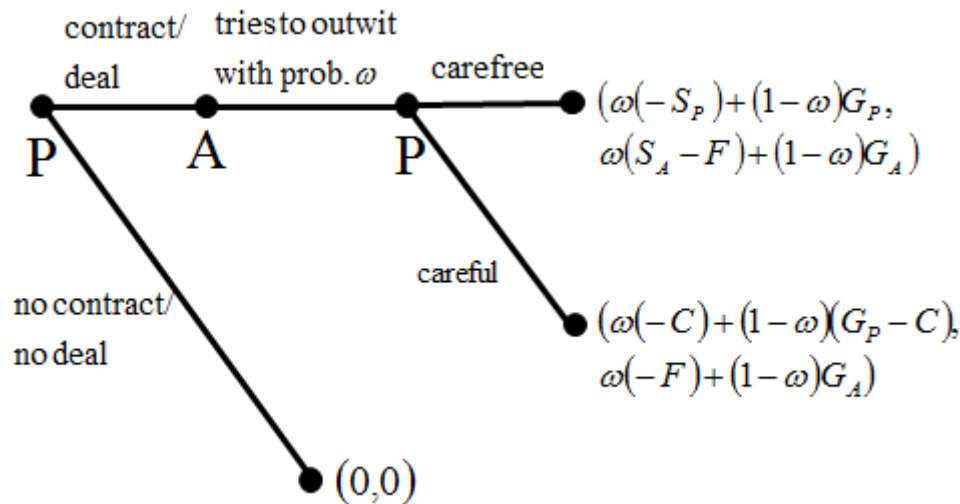

Figure 3: The gains-from-trade problem for imperfect information

If the fine is relatively large, the principal foresees the outwitting probability $\hat{\omega} = 0$ and can earn the payoff $G_P > 0$ by contracting with the agent. If, however, the fine is relatively small, the outwitting probability is $\hat{\omega} = \dfrac{C}{S_P}$ and, hence, contracting with the agent pays only for

$$\hat{\omega}(-S_P) + (1 - \hat{\omega})G_P = -C + \left(1 - \frac{C}{S_P}\right)G_P > 0$$

or

$$G_P > \frac{C}{1 - \dfrac{C}{S_P}} = \frac{1}{\dfrac{1}{C} - \dfrac{1}{S_P}}$$

Inversely, the principal (the uninformed side) does not enter into a deal with the agent

- if the fine is smaller than the difference between the agent's scam payoff and the agent's gain from honest trading ($F < S_A - G_A$),
- if the principal's gain G_P from dealing with the agent is relatively small,
- if the principal's cost of careful behaviour C is relatively large and his scam payoff S_P relatively small (remember our assumption $S_P > C$).

Therefore, the agent may hope for a large fine (the first bullet point) if he cannot otherwise convince the principal to deal with him (the second and third bullet point).

III. Principal-agent theory's outwitting problem

A. Hitopadeśa/ Pañcatantra

In the *Pañcatantra*, trust and the outwitting problem are often dealt with. See, for example,

> 'He is my friend!'–is that any reason to trust a scoundrel?
> 'I have done him a great many favors!'–that counts for nothing!
> 'This man is my very own relative!'–that's an old folk tale!
> People are driven by money alone, no matter how small.[10]

The *Pañcatantra*'s "central message" is that "craft and deception constitute the major art of government". But: "Deception, of course, is a double-edged sword; it is important to use it against others, but just as importantly one must guard against its use by others against oneself. So, in a sense, even the losers provide counter-examples".[11] We refer the reader to section II where the attempt of out-witting (on the agent's part) and the care taken by the principal to prevent this has been formally modelled.

The serious problem of asymmetric information is neatly summarized in the Hitopadeśa:

> If you have to cross an impassable ocean, you have a boat;
> when darkness comes, you have a lamp;
> […]
> Thus there is no problem in the world for which
> the Creator has not carefully invented some solution.
> But when it comes to countering a wicked person's way of thinking,
> it seems to me that even the Creator has failed in his efforts.[12]

Turning to the model of section II, we can translate the principal's impossibility of reading the agent's mind into large cost C of being careful. Then, $\frac{C}{s_P}$ is large and the principal is likely to be defrauded.

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[10] See Olivelle 2006: 271.
[11] These quotes are found in Olivelle 2006: 40–41. Wiese 2012 argues that this art amounts to applying the game theoretic method of backward induction.
[12] See Törzsök 2007: 323.

Thus, the fables provide ample material for the outwitting problem. In contrast, we did not manage to find gains-from-trade problems in the two fable collections.

B. Kauṭilya

Kauṭilya is a foremost expert on outwitting problems or so it seems from the evidence found by the current author. For example, in *Arthaśāstra* 4.8[13], *Kauṭilya* advises the king to investigate wrongdoings "through interrogation and torture" and suggests in KAŚ 1.10[14] to find out about "the ministers' integrity […] through secret tests".

Trying to cheat and preventing to be cheated upon is the aim of KAŚ 7.17[15], where *Kauṭilya* discusses peace making through hostages and writes: "The taking of a kinsman or a chief constitutes a hostage. In this event, the one who gives a traitorous minister or a traitorous offspring is the one who outwits. One who does the opposite is outwitted".[16] It is from this translation by Olivelle that the "outwitting" problem has obtained its name.[17] Again, gains-from-trade problems were not found in the *Arthaśāstra*.[18]

C. Varuṇa as chastiser of kings

1. How can an unjust king be punished?

Sometimes, the actions that someone expects another one to perform (or the actions that the first expects the second to avoid) are in line with *dharma* texts. *Viṣṇu* 5[19] lists the punishments to be administered by the king in some detail, for "crimes deserving capital punishments", for "offences against upper classes by lower classes", for "verbal abuse and assault", for "sexual crimes", and so on. A king's responsibility for punishment is clear from many texts. For example, *Manu* 7.16[20] demands:

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[13] See Olivelle 2013: 239–241.
[14] See Olivelle 2013: 75–76.
[15] See Olivelle 2013: 323–325.
[16] See KAŚ 7.17.11–13 in Olivelle 2013: 323.
[17] The Sanskrit root for "outwit" is *ati-sam-dhā* (KAŚ 7.17.12–13 in Kangle 1969: 199). Kangle (1972: 376) translates as "over-reach".
[18] It seems that all the examples given by Sihag 2007 and Brockhoff 2015 clearly fall into the category of outwitting problems. Sihag 2014: ch. 11 discusses how *Kauṭilya* deals with incentive problems (i.e., with methods used by employers to attract good workers and make the employed ones work hard in the employers' interests).
[19] See Olivelle 2009: 56–62, 230–244.
[20] See Olivelle 2005: 154, 615.

The king should administer appropriate Punishment on men who behave improperly [...]

[...] *yathārhataḥ saṃpraṇayen nareṣv anyāyavartiṣu*

One good reason for punishment is given by *Manu* 7.20[21]:

If the king fails to administer Punishment tirelessly on those who ought to be punished, the stronger will grill the weak like fish on a spit

yadi na praṇayed rājā daṇḍaṃ daṇḍyeṣv atandritaḥ |
śūle matsyān ivāpakṣyan durbalān balavattarāḥ

The Indian texts now start to worry about the king's incentives to admimister justice in the correct manner. As the famous Latin saying goes: "quis custodiet custodes ipsos", i.e., who supervises the supervisors? One answer given by *Manu* 9.245[22] points to *Varuṇa* as chastiser of kings: *Varuṇa*

holds the rod of punishment over kings

rājñāṃ daṇḍadharo hi saḥ

We then have a two-level structure where *Varuṇa* can punish the king who in turn can punish his subjects. At this juncture, one might worry about *Varuṇa*'s incentives to chastise the king appropriately. Can we run into a regressus ad infinitum? Presumably not, because the god *Varuṇa* does not encounter any incentive problems, himself.

The same idea is expressed in *Arthaśāstra* 4.13.43[23]:

Varuṇa is the one who disciplines kings when they act wrongly with respect to men

śāstā hi varuṇo rājñāṃ mithyā vyācaratāṃ nṛṣu

Thus, the subjects in Indian *artha* and *dharma* books are monitored and punished (if need be) in order to make them act according to *dharma*.

So far, we have looked at "Varuṇa as chastiser of kings" from the perspective of two-level punishment. We now suggest to take the point of view of principal-agent theory. In that perspective, the king is the agent who administers justice

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[21] See Olivelle 2005: 155, 615–616.
[22] See Olivelle 2005: 202, 792.
[23] See Olivelle 2013: 252 and Kangle 1969: 150.

towards his subjects, the principals. In terms of our model in section II, the subjects "deal" with the king (the agent) by living in his realm or choosing to settle there. The king (as agent) then may outwit his subjects (the principals) by administering justice in a selfserving manner. Finally, the subjects may employ some cost and scrutinize the king's handling of justice.

In this setting, the role of *Varuṇa* consists of fining the misbehaving king. One might argue (with *Manu*) that the king will fulfill his *rājadharma* if he is afraid of the chastiser *Varuṇa*. Indeed, this is in line with the role of the fine *F* in our model in section II. However, for the "*Varuṇa* the chastiser" argument to go through, it is not the king's belief that is relevant. Rather, the subjects need to believe that the king is a believer. Thus, we need second-order beliefs[24] which are more difficult to uphold than first-order ones.

If the belief argument is too facile, we need to supply additional arguments of how *Varuṇa*'s punishment might work. Does it imply that the king, the most powerful agent himself, would somehow need to punish himself? Against this idea, Kane[25] has already opined that "these prescriptions [...] were counsels of perfection and must have been futile. No king would ordinarily fine himself". He then refers to medieval texts where the king is understood as a "subordinate chief". Then, it is not *Varuṇa* himself who is doing the punishing, but the overlord, instead. This is a good explanation, as far as it goes. However, it just pushes up the problem one level. After all, how would, then, an unjust overlord be brought to justice?

Derrett[26] criticizes Kane by pointing to "the hieratic element in ancient Indian society". While Derrett does not explain how exactly he envisions the priestly involvement in this matter, we also think it best not to construe *Manu* or *Kauṭilya* in this way. We will take up this problem and Kane's dictum ("no king would ordinarily fine himself") in section IV.

2. Why Varuṇa?

Before doing so, we turn to the question of why *Varuṇa*, and not some other god from the Hindu pantheon, is responsible for the punishment of kings. Here, we can follow Oberlies[27] back to Vedic times: *Indra* is one of the most important Vedic gods. He is especially known as the slayer of the demon *Vṛta* an act by which the waters were freed. *Indra*'s world is a raw, unfinished business. It is *Varuṇa* who then determines the sun's orbit and the rivers' paths. Analogously, *Indra* and *Varuṇa* are involved in the Vedic clans' living. Oberlies stresses the

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[24] See Geanakoplos 1994.
[25] Kane 1973: 176–177.
[26] Derrett 1975b: 193, fn. 1.
[27] Oberlies 2012: 96–105.

phases of *yoga* (yoking the horses in order to move to new areas in fighting mode) and *kṣema* (peaceful settlement). *Indra* is associated with *yoga*. He is invoked by the Vedic clans that hope for victory. In contrast, *Varuṇa* and other related gods see to the orderly functioning of settled human society.

Against this background, we can understand the work by Thieme[28] on gods that deal with contracts and truth-telling, i.e., principal-agent problems. In classical Sanskrit, *mitram* is a neuter (!) noun meaning friend. Thieme[29] clearly sides with Antoine Meillet who claims that, in Vedic times, the meaning of *mitram* was "contract" from which the meaning of friendship and then friend developed. Thieme cites the *Ṛgveda* (RV) to support Meillet's and his own claim:

> Contract, when named, makes peoples array (arrange) themselves [with regard to each other] (='causes them to make mutual arrangements').[30]

He adds that "[a]lso other gods may receive this qualification: God Fire (Agni), the fire being invoked as a witness at the conclusion of certain contracts [...] or God Varuna, that is the personified Oath [...] or, as I should prefer, the personified True Speech."[31]

Mitra and *Varuṇa* are often mentioned together:

> You two (Mitra and Varuna, i.e., Contract and True-Speech) are of firm peace through vow (= you secure peace by seeing to it that vows are kept), you cause people to make mutual agreements through firmness (= you make contractual agreements desirable as establishing firm relations).[32]

They produce very beneficial results:

> You two, king Contract and king True-Speech, made firm earth and heaven by your greatness. Cause plants to grow, cause cows to swell [with milk], send down rain, you of live wetness![33]

Thieme comments: "The original motivation for their creating prosperity is, of course, that Contract and True-Speech secure peace."[34] From the perspective of this paper, prosperity can flourish because the principal-agent problems are overcome.

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[28] Thieme 1957.
[29] Thieme 1957: 18.
[30] See RV 3.59.1a in Thieme 1957: 39.
[31] See Thieme 1957: 40–41.
[32] See RV 5.72.2ab in Thieme 1957: 41.
[33] See RV 5.62.3 in Thieme 1957: 43.
[34] Thieme 1957: 43.

Of course, there must be some sanctions if somebody does not keep a contract:

> These two (Contract and True-Speech) have many slings (in which to catch a cunning transgressor), they are fetterers of untruth, difficult for the deceitful mortal to circumvent.[35]

Thus, *Varuṇa* as chastiser of king has Vedic credentials.

IV. Principal-agent theory's gains-from-trade problem

We claim that the gains-from-trade problem might not have been obvious to Old Indian thinkers on *dharma* and *artha*. Be that as it may, this problem was "known" by the institutions in the sense of Hayek (see the introduction). Some Indian *dharma* texts mention the punishment of confiscating property (see also the conclusion).[36] It is surely significant that the quotations about *Varuṇa* as the chastiser of kings (subsection III.C.1) occur in the context of casting property or fines into water or giving them to Brahmins. In *Manu* 9.242–247[37], we read:

> [242] When others [i.e., not Brahmins, HW] commit these sins [causing loss of caste, HW], however, they deserve to have all their property confiscated, if they did them thoughtlessly, or to be executed[38], if they did them wilfully.
> [243] A good king must never take the property of someone guilty of a grievous sin causing loss of caste; if he takes it out of greed, he becomes tainted with the same sin.
> [244] He should offer that fine to Varuṇa by casting it into water, or present it to a Brahmin endowed with learning and virtue.
> [245] Varuṇa is the lord of punishment, for he holds the rod of punishment over kings; and a Brahmin who has mastered the Veda is the lord of the entire world.
> [246] When a king refrains from taking the fines of evildoers, in that land are born in due course men with long lives;
> [247] the farmers' crops ripen, each as it was sown; children do not die; and no deformed child is born.

> [242] *itare kṛtavantas tu pāpāny etāny akāmataḥ |*
> *sarvasvahāram arhanti kāmatas tu pravāsanam*

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[35] See RV 7.65.3ab in Thieme 1957: 52.

[36] The property of both the culprit and its relatives could be confiscated according to a Tamil inscription from 988 CE (see Sastri 1931/1932).

[37] See Olivelle 2005: 202, 791–792.

[38] Bühler 1886: 384 translates as "banished". Olivelle 2005: 332 can point to some commentaries supporting his understanding (e.g., Mandlik 1886, vol II: 1237–1238). This controversy is unimportant here.

^{243} *nādadīta nṛpaḥ sādhur mahāpātakino dhanam |*
ādadānas tu tal lobhāt tena doṣeṇa lipyate
^{244} *apsu praveśya taṃ daṇḍaṃ varuṇāyopapādayet |*
śrutavṛttopapanne vā brāhmaṇe pratipādayet
^{245} *īśo daṇḍasya varuṇo rājñāṃ daṇḍadharo hi saḥ |*
īśaḥ sarvasya jagato brāhmaṇo vedapāragaḥ
^{246} *yatra varjayate rājā pāpakṛdbhyo dhanāgamam |*
tatra kālena jāyante mānavā dīrghajīvinaḥ
^{247} *niṣpadyante ca sasyāni yathoptāni viśāṃ pṛthak |*
bālāś ca na pramīyante vikṛtaṃ ca na jāyate

Arthaśāstra 4.13.42–43[39] has these prescriptions:

> ^{42} For a king fining someone who does not deserve to be fined, the fine is 30 times that amount. He should place it in water for Varuṇa, and then give it to Brāhmaṇas.
> ^{43} By that, the king's sin caused by wrongful infliction of fines is cleansed, for Varuṇa is the one who disciplines kings when they act wrongly with respect to men.

> ^{42} *adaṇḍya daṇḍane rājño daṇḍas trimśadguṇo 'mbhasi |*
> *varuṇāya pradātavyo brāhmaṇebhyas tataḥ param*
> ^{43} *tena tat pūyate pāpaṃ rājño daṇḍāpacārajam |*
> *śāstā hi varuṇo rājñāṃ mithyā vyācaratāṃ nṛṣu*

There is an obvious parallel in *Yājñavalkya* II.307[40]:

> If the king has taken a fine unlawfully, he himself should give it to Varuṇa [and then] thirty times [that fine] to the Brahmins, having informed them [about the unlawful fine].

> *rājñā 'nyāyena yo daṇḍo gṛhīto varuṇāya tam*
> *nivedya dadyāt viprebhyaḥ svayam triṃśadguṇīkṛtam*

Superficially, these passages are clear and do not present any translational difficulties.[41] In *Manu*, the king is strongly advised not to keep any confiscated property for himself or his treasury. Instead, he should throw it into the water or give

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[39] See Olivelle 2013: 252 and Kangle 1969: 150.
[40] See Sāhityācārya/Sāhityopādhyāya 1930: 753 or Banerji 1996: 63. Derrett (1975b: 193, fn 1) points to this rule about the "destination of the fine". The reading given here is to be preferred to the one found in Sastri (1982, part I: 298): *rājñā nyāyena yo daṇḍo 'gṛhīto varuṇāya tam.*
[41] The commentaries on *Manu* (see Mandlik 1886, vol II: 1237–1239; Derrett 1975a: 189–190, Derrett 1975b: 271–272) are short and do not mention specific problems.

it to the Brahmins. *Manu* expounds the negative consequences of the king's confiscating for himself (in 9.243) and the positive consequences of not doing so (in 9.246–247). We call the prescription to give the fine "to Varuṇa by casting it into water" the "*Varuṇa* clause". Strictly speaking, "casting into water" and confiscation are contradictory terms. Lat. *fiscus* means treasury and confiscation hence "adjoining the treasury". From this perspective, one might say that *Manu* 9.242–247 forbids confiscation. However, we will understand confiscation as asset forfeiture or asset seizure, irrespective of how the property taken[42] is dealt with.

The *Arthaśāstra* also mentions water, but here, *Kauṭilya* does not seriously entertain the possibility of casting the fines (this time to be paid by the king himself) into the water. Instead, "place it in water for Varuṇa, and then give it to Brāhmaṇas" seems to be a short description of a ceremony by which the king is cleansed of his judicial mistake.

Similarly, the *Manu* commentator *Rāghavānanda* seems to consider the Brahmins as the final receivers:

> Indeed, however, aiming at Varuṇa, it should be given to a Brahmin. Therefore, Yājñavalkya required expiation for the Brahmin who accepts that wealth
>
> *vastutas tu varuṇāya saṃkalpya viprāyopapādayet ata eva tad dhanaṃ svīkartur viprasya prāyascittam āha yājñavalkyaḥ*[43]

Rāghavānanda probably alludes to *Yājñavalkya* III.289[44]:

> If a person should have accepted bad things, he is cleansed by staying in a cowshed for one month, practising chastity, observing the vow to subsist only on milk, and engaging in *Gāyatrī* prayer.
>
> *goṣṭhe vasan brahmacārī māsam ekaṃ payovrataḥ*
> *gāyatrījapyaniratah śuddhyate 'satpratigrahāt*

However, it seems unlikely that the property taken from guilty people and given to a Brahmin come under the heading of "bad things". Also, while *Yājñavalkya*

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[42] In *Nāradasmṛti* 18.12 (in Lariviere 2003: 222, 426) and in *Manu* 8.399 (in Olivelle 2005: 188, 740) we have the root *hṛ*. In contrast, *Manu* 10.96 (in Olivelle 2005: 213, 829) uses the expression *nirdhanaṃ kṛ*. In the *Lekhapaddhati-Lekhapañcāśīkā* (Gujarat, 13th to 15th century), we have *vyāṣeda* which is translated by Strauch (2002: 157–158, 351–352) as confiscation, but refers to a tax in a specific area (Strauch 2002: 351, fn. 1). Confiscation in the proper sense of the word is expressed by *rāja-saṃjātyāṃ kṛ* (Strauch 2002: 158, 352–353). Both these uses do not refer to confiscation in the context of criminal law.
[43] See Mandlik 1886, vol II: 1239 on *Manu* 9.245.
[44] See Sāhityācārya/Sāhityopādhyāya 1930: 1042. This corresponds very closely to *Yājñavalkya* III.284 (in Sastri 1982, part II: 167).

recommends confiscation (see conclusion), the giving of the confiscated property to Brahmins is not found in that text. In any case, some *Manu* commentators understand "casting into water" as a serious option. For example, *Medhātithi* requests to meditate on the receiver *Varuṇa*:

> meditating "this is to Varuṇa" in one's mind, he [the king] should throw it into waters

> *varunāyedam iti manasā dhyāyann apsu dadyāt*[45]

Why should *Manu* demand that the king does not keep the confiscated property taken from the offenders? Is it not pure waste to throw the property into the water? Of course, one might point to the alternative of giving the property to Brahmins. After all, Brahmins do often benefit from unclaimed property. If a treasure-trove is found, *Viṣṇu* 3.56–61[46] lets the Brahmins obtain 5/12, 1/4, 1/2, or all of it, depending on the social class of the finder. In support of the Brahmin alternative, Balbir Sihag (in a personal communication) points out that silver coins could be picked up by anyone (possibly undeserving) and that houses or cows cannot be thrown into water for other obvious reasons.

One may, then, as also suggested by Balbir Sihag, see the *Varuṇa* clause as another clever device by Brahmins to gain influence and wealth. That is certainly a valid point. However, to our mind, there is more behind the *Varuṇa* clause. We have discussed above that the king who does not have an overlord is in a difficult position. He certainly likes to be reckoned a just king and enjoy the loyalty of his ministers and subjects. The importance of loyalty is clearly spelled out in *Arthaśāstra* 7.5.19–27[47]:

> [19] […] by casting away good people and embracing evil people,
> by initiating unprecedented and unrighteous acts of violence;
> [20] by discontinuing customary and righteous practices,
> by addiction to what is unrighteous,
> and by severing himself from what is righteous;
> […]
> [26] through the negligence and lazyness of the king or the destruction of enterprise and security,
> there arise the impoverishment, greed, and disloyalty of subjects.
> [27] When impoverished, subjects become greedy; when they are greedy, they become disloyal;
> and when they are disloyal, they either go over to the enemy or kill their lord themselves.

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[45] See Mandlik 1886, vol II: 1238 on *Manu* 9.244.
[46] See Olivelle 2009: 54, 224.
[47] See Olivelle 2013: 290 and Kangle 1969: 176.

¹⁹ *avakṣepena [...] satām asatāṃ pragraheṇa ca |*
abhūtānāṃ ca hiṃsānām adharmyāṇāṃ pravartanaiḥ
²⁰ *ucitānāṃ caritrāṇāṃ dharmiṣṭhānāṃ nivartanaiḥ |*
adharmasya prasaṅgena dharmasyāvagraheṇa ca
[…]
²⁶ *rājñaḥ pramādālasyābhyāṃ yogakṣemavadhena vā |*
prakṛtīnāṃ kṣayo lobho vairagyaṃ copajāyate
²⁷ *kṣīṇāḥ prakṛtayo lobhaṃ lubdhā yānti virāgatām |*
viraktā yāntyamitraṃ vā bhartāraṃ ghnanti vā svayam

Now, in his position relative to his subjects, the king is the agent who knows best whether he acts justly. How can he, even if well-intended, convince the subjects? Just saying: "I am a just king" will generally not suffice. In game-theory parlance, this would just be "cheap talk" and hence not credible.

Here, the *Varuṇa* clause may help the king to "prove" that he is a good king, a king who would not take property as a fine in order to enrich himself or in order to fill his depleted treasury. The best way to do this would then be a ritual, with Brahmins performing the rites and many onlookers. Indeed, Chwe[48] advances the interesting idea that rituals serve the purpose of producing "common knowledge", here, the common knowledge of a just king. [49]

We now return to Kane's assertion that "[n]o king would ordinarily fine himself". From the perspective of the gains-from-trade problem one might reply: Maybe, he would not, but he would like to be able to. Indeed, section II shows that a high fine may lead the agent to deal honestly. And this will often be in the agent's own interest, earning the payoff G_A rather than zero. *Varuṇa*, the chastiser of kings, may be of some help. But, if that is not enough, the king has to incur some cost, for example by offering the confiscated property "to Varuṇa by casting it into water".

V. Conclusions

It is very difficult not to be impressed by the social insights that are present in Indian texts, explicitly and implicitly. It is the thesis of this paper that, in the realm of principal-agent theory, *Kauṭilya*, the fable writers, and others had a clear understanding of outwitting problems: How to find out about the enemy's intention and prevent the enemy from finding out about one's own plans, how to outwit and not to be outwitted. With respect to gains-from-trade problem, the

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⁴⁸ Chwe 2001.
⁴⁹ Common knowledge is said to be present between actors A and B if A knows something, B knows that A knows it, A knows that B knows that A knows etc. ad infinitum.

relevant knowledge was embodied in some rules, but probably not properly understood.[50]

So far, the *Varuṇa* clause has not gained the attention it deserves. Kane[51] mentions *Manu* 9.242, but does not offer any comments beyond those dealt with above. Interestingly, the clause present in *Manu* is not to be found in other *mūlasmṛti*s we looked at:

	Confiscation	*Varuṇa* clause
Mānava-dharmaśāstra	yes[52]	yes
Nārada-smṛti	yes[53]	no
Vaiṣṇava-dharmaśāstra	yes[54]	no
Kauṭilya-arthaśāstra	yes[55]	no[56]
Yājñavalkya-smṛti	yes[57]	no[58]
Bṛhaspati-smṛti	yes[59]	no
Āpastamba-dharmasūtra[60]	no	no
Gautama- dharmasūtra	no[61]	no
Baudhāyana-dharmasūtra[62]	yes	no
Vasiṣṭha-dharmasūtra[63]	no	no

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[50] Sihag (2007: 41) is certainly overdoing his praise for *Kauṭilya* while playing down the advances made in game theory: "Although Kautilya does not provide any formal analysis, his approach contains almost all the ingredients of a [sic, HW] game theory. He was certainly not aware of the numerous new jargons, such as sequential rationality, [...] which have been added to the vocabulary during the past few decades to study strategic interactions."

[51] Kane 1973: 404.

[52] The citations above and *Manu* 8.374–375 (in Olivelle 2005: 186, 734–735); *Manu* 8.399 (in Olivelle 2005: 188, 740) and *Manu* 10.96 (in Olivelle 2005: 213, 829).

[53] See *Nārada* 12.70 in Lariviere 2003: 199, 392, *Nārada* 18.11–12 in Lariviere 2003: 221–222, 426, *Nārada* 19.35 in Lariviere 2003: 229, 439, and *Nārada* 19.49 in Lariviere 2003: 230, 442.

[54] See *Viṣṇu* 3.31 in Olivelle 2009: 53, 222 and *Viṣṇu* 5.180 in Olivelle 2009: 61, 242.

[55] See subsection III B.

[56] In section IV, KAŚ 4.13.42–43 does not refer to confiscation, but to a fine paid by the king.

[57] *Yājñavalkya* II.187 (in Sāhityācārya/Sāhityopādhyāya 1930: 668), reads:
      If a person steals public property and violates the custom [?],
      he should be made to leave the kingdom after all his property has been taken.
      gaṇadravyaṃ hared yas tu saṃvidaṃ laṅghayec ca yaḥ
      sarvasvaharaṇaṃ kṛtvā taṃ rāṣṭrād vipravāsayet
The Sanskrit text is practically the same in *Yājñavalkya* II.191 (in Sastri 1982, part I: 267).

[58] In section IV, *Yājñavalkya* II.307 does not refer to confiscation, but to a fine paid by the king.

[59] *Bṛhaspati 24.14* (in Aiyangar 1941: 190) reads:
      Who, however, has intercourse by a trick, his punishment is taking of everything.
      chadmanā kāmayed yas tu tasya sarvaharo damaḥ

[60] See Olivelle 2000.

[61] The "legitimate seizure of property" in *Gautama* 18.24–32 (in Olivelle 2000: 166–169) refers to takings by private individuals from others, in particular arising from needs with respect to marriage and hunger.

[62] *Baudhāyana 1.18.19* (in Olivelle 2000: 234–235) reads:
      When a man belonging to the Kṣatriya or lower class kill a Brahmin, he should be executed and all his property confiscated.
      kṣatriyādīnāṃ brāhmaṇavadhe vadhaḥ sarvasvaharaṇaṃ ca

[63] See Olivelle 2000.

Contrary to the above table, one may argue that both *Arthaśāstra* 4.13.42 and *Yājñavalkya* II.307 deal with a variant of the *Varuṇa* clause. However, these authors deal with punishments for kings who do not justly punish. In contrast, the *Varuṇa* clause is about property punishments inflicted by the king.

Something similar to the *Varuṇa* clause may be present in the observation made by Stark/Finke (2000, p. 112) that offerings are often burnt. The underlying rationale may be that enjoyment of the offering by the officiating priest is made impossible? In contrast, Indian texts report on an eating community between gods and men where men eat the "remains" of the food offered to the god.

In this paper, we have put the focus on "hidden action". Within principal-agent theory, there exists a second set of models summarized under the heading of "adverse selection". In these models, agents are of different types, most simply of "good" or "bad" types. Consider a firm (the principal) that thinks about employing a worker (the agent). The worker knows about his aptitude while the firm does not (or can ascertain the aptitude only in a costly manner). The outwitting problem that principal-agent theory raises in this context is the following: How might the principal construct a contract so that he attracts the able workers (the good types) and is not tricked into accepting a useless one? There exists a related gains-from-trade problem that can also be addressed: How can the agent reveal his aptitude in a verifiable manner? After all, the informational asymmetry may well go against his interest. If the firm cannot ascertain the prospective worker's ability, the able worker might not be employed in the first place.

The *Hitopadeśa* offers this advice:

> A brahmin, a warrior or a relative should never be appointed as treasurer.
> A brahmin would not be able to keep even the money
>   that has already been obtained, however hard he tries.
> If a warrior were entrusted with money,
>   he would surely wave his sword at you;
> and a relative would seize all your possessions
>   on the grounds that they belong to the family.[64]

This is an outwitting problem: Do not employ anybody who might not be able or willing to honour your trust. An inverse outwitting problem is encountered in the tiger-traveler *Hitopadeśa* fable where the tiger successfully mispresents himself as a trustworthy being:

> Listen, O traveller, I behaved very badly long ago, when I was young
> […]. Then a pious man suggested that I should practice charity, fulfill my

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[64] See Törzsök 2007: 271.

religious duties, and so on. Following this advice, I now take ritual baths and make donations. I am old, and have no fangs—why wouldn't I be trustworthy?[65]

In the fable, the tiger manages to convince the traveller that he is of a good type. Concerning adverse selection, we are not aware of any gains-from trade problems treated in Old Indian texts.

One may criticize this paper for not comparing different possible methods of instilling confidence into the king's just behaviour (but see the discussion in section III C 1). After all, the *Varuṇa* clause is only one such method (if the current author is correct in this regard). Our main excuse is that a list of all these methods is not at hand. And even with such a list, a relative evaluation might prove very difficult. In that sense, the paper is more modest than one may hope for.

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[65] See Törzsök 2007: 85.

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