Equation (2) indicates the reaction function, r_1 of king one for period one, which depends on the policy decisions of the king two in both the periods (i.e. on A_1 and A_2).

Equation (3) indicates that the reaction function, r_2 of king one in period two depends on his decisions taken in period one (i.e., r_1) and A_2.

Let A^*_1 and A^*_2.be the optimum values such that king two's objective function is maximized subject to the reaction functions of king one.[6] King two announces these policies (promises) at the beginning of period one. King one undertakes his measures believing that king two would keep these promises. At the end of the first period (beginning of the second period), the reaction function of king one takes the form:

$r^*_1 = R_1 (A^*_1, A^*_2)$.

Possible Re-Optimization by king two: Kautilya (p 624) states, "The king may face dangers even from a trusted king of equal power, when the latter has achieved his objective. Even an equally powerful king tends to become stronger after the task is accomplished and, when his power has increased, becomes untrustworthy. Prosperity changes peoples' minds (7.5)."

Kautilya is quite concerned that the commitments made by king two (the ally) before the start of the campaign may not be honored after its completion. Since the actions of king two could not be constrained by current commitments in any credible way. According to Kautilya, the relative power of a king was one of the important determinants of success in a war and consequently the non-aggression treaty agreed upon by the second king might be annulled and he might turn against king one.[7] Also whatever shares were specified before the start of the campaign may not be optimal after a successful campaign. According to Kautilya, king two after a successful campaign, particularly if he is equal or stronger (and not upright), may decide to re-optimize. That is, king two could re-

6 The optimum values of A_1 and A_2 are determined as follows:

$$\text{Max } G^2 (r_1, r_2, A_1, A_2) = G^2_1 (r_1, A_1) + G^2_2 (r_2, A_2) \quad (1)$$

Subject to the reaction functions r_1 and r_2 of king one

$$r_1 = R_1 (A_1, A_2) \quad (2)$$

$$r_2 = R_2 (r_1, A_2) \quad (3)$$

Differentiating equation (1) with respect to A_1 and A_2 gives

$\partial G^2_1 / \partial A_1 + (\partial G^2_1 / \partial r_1 + (\partial G^2_2 / \partial R_2) (\partial R_2 / \partial r_1)) \partial R_1 / \partial A_1 = 0$

$(\partial G^2_1 / r_1) (\partial R_1 / \partial A_2) + \partial G^2_2 / \partial r_2 ((\partial R_2 / \partial A_2) (\partial R_1 / \partial A_2) + \partial R_2 / \partial A_2) + \partial G^2_2 / \partial A_2 = 0$

A^*_1 and A^*_2 are the optimum values obtained by solving these two equations. For a very lucid exposition of the time inconsistency problem (see Bowden, p 196-199).

7 This is based on Sihag's (2005) presentation of Kautilya's relative power model. Kautilya's lengthy discussion on a king's power is captured by the following specification:

$P = A (J, H) (K)^{\lambda} (E L_m)^{(1-\lambda)}$

Where P_1 and P_2 = powers of king one and king two respectively, H = knowledge, experience and analytical skills of the advisers, K = armaments, E = enthusiasm L_m= military strength, J = level of public support for a just and kind-hearted king. Kautilya believed that λ was far greater than $(1-\lambda)$.

According to Kautilya, if the relative power of king two, $R = P_2 / P_1 > 1$, then there was a high probability of king one getting attacked by king two.

optimize his objective function for period two as follows:

$$\text{Max } G^2_2 = G^2_2 (r_2, A_2) \tag{4}$$

Subject to

$$r_2 = R_2 (r^*_1, A_2) \tag{5}$$

Let A^C_2 be the revised policy adopted to maximize G^2_2 in equation (4) subject to r_2 in equation (5). According to Kautilya, it was likely to be different from the initial policy A^*_2 that is, $A^C_2 \neq A^*_2$ and particularly, if the second king was not upright. In other words, according to Kautilya, king two was likely to cheat on his promises implying he could attack king one or not give his due share out of the loot and land acquired through a successful campaign.

Precautionary Measures in Anticipation of Possible Reneging by King two: Kautilya suggests that king one should take defensive measures to protect his interests against the likely reneging by king two (his ally) on the contractual arrangements. He suggests specific actions to be undertaken by king one depending on the anticipated circumstances. He (p. 596) states, "If a king believes that the one to whom troops are lent will, after achieving the objective for which they were hired, appropriate them himself, send them to hostile lands or jungles, or, in some fashion make them useless, the forces shall not be lent, using the pretext that they are needed elsewhere.

If, however, he is obliged to lend his troops, they shall be lent only for the limited period of that campaign, on condition that they shall stay and fight together and be protected from all dangers till the end of the campaign; as soon as the campaign is over, they shall be withdrawn on some pretext (7.8)." Kautilya (p. 624) adds, "If the stronger ruler is not upright, the king shall quickly withdraw under some pretext, when the work has been done. If the stronger ruler is upright, the king shall wait until he is given permission to leave. The king shall make all efforts to move away from a dangerous situation, after ensuring the safety of the queen. Even if the king receives a small share, or even no share, from a stronger king, he shall go away with a (seemingly?) content look. Later, when the strong king comes under the king's power (for any reason) twice the loss shall be exacted."

Kautilya (p 609) states, "An ally who is likely to grow in power after defeating the enemy and thus become uncontrollable shall be embroiled in a conflict with his own neighbor and his own ally; or, a pretender in his family or an unjustly treated prince shall be encouraged to seize the throne; or such actions shall be taken as would oblige the ally to remain obedient, in return for help received (7.18)."

If King One is the Campaign Leader: Kautilya (p. 624) suggests, "The king, when he himself has led the allies to victory, shall let the others go, after giving them their due shares. He should, if necessary, forgo his own share and not deprive them of theirs. It is thus that a king will win the affection of his Circle of States (7.5)."

Several points are noteworthy. First, Kautilya displays an insight into the time inconsistency problem. He suggests to king one to take defensive measures to protect against a possible reneging and a threat of aggression against him by king two. Kautilya is aware of the irresistible temptation on the part of the leader of a joint campaign to cheat his followers and advance his own objectives. Blackburn and Christensen (1989) also point out the possibility of such an outcome. They state, "A non-cooperative Stackelberg game possesses a definite hierarchial structure in the sense that some players (leaders) have the potential to impose their policies on others (followers)." They add, "This is because of an incentive for a leader to improve his own payoff by reneging (cheating) on his promised action, an indication that the optimal policy in Stackelberg games is dynamically inconsistent." It also implies that every king would like to be a leader and as Nicholson (1985, p. 458-459) notes, which might have disastrous consequences. Second, a 'tit for tat' motivation is also present. If the leader of a campaign (king two) does not fulfill his commitments, he should be given the same treatment whenever he comes under the leadership of king one. Third, Kautilya recommends to a king to build his reputation to be trustworthy, which may be an asset in maintaining or forming new coalitions in the future.

Trust as the Primary Criterion in the Selection of an Ally: Selecting a conservative fed Chairman (or Governor of a Central Bank) has been recommended to resolve the inconsistency or credibility problem. Similarly, Kautilya recommends that an ally should be upright. He ranks possible allies according to their trustworthiness, and current and future potential gains to the king. He (p. 606) explains, "The best ally is one who has the following six qualities: an ally of the family for a long time, constant, amenable to control, powerful in his support, sharing a common interest, able to mobilize his forces quickly and not a man who betrays his friends (7.9)."

Kautilya elaborates on these qualities. He (p. 606) asserts, "A true friend is one who shares with the king a common objective, is helpful, never changes and never double crosses even when the king is in trouble (7.9)." He (p. 607) observes, "That friend whose friendship has endured since earlier times and who protects and is in turn protected out of love and not for mercenary reasons is called a constant ally (7.9)."

An ally should be trustworthy and capable of helping the king. However, sometimes the choice may not be that easy. For example, some possible allies who are equal or stronger than the king may be capable of helping but not trustworthy and others may be controllable but weak.

Kautilya (p. 573) advises a king, "Amity with a more powerful monarch carries great danger for kings, except when one is actually at war with an enemy (7.2)." He (p. 616) adds, "As between joining forces with a ruler who is stronger than the king or with two rulers of strength equal to the king, it is better to join two equal kings. For with one ruler, the stronger ruler will have the upper hand during the campaign, whereas with two equals

the king can keep control. If one of them turns treacherous, it will be easy for the other two to suppress him and make him suffer the consequences of the dissent (7.5)."

Kautilya prefers weaker kings for an alliance since they cannot dare to renege on their commitments. Whereas, he believes that equal or stronger king may not keep their commitments. Kautilya suggests if a king does not trust another king, he should try to avoid forming an alliance with that king. In the light of above statements, the following matrix may be used to capture his ideas regarding potential allies.[8]

TABLE 1

SELECTION OF AN ALLY

King One	King Two	
	Not Revise	Revise
Believe	Weaker or upright	
Not Believe		Equal or Stronger and not upright

The above matrix may be used to express Kautilya's classification of all possible allies. For example, if king two has the six qualities or has the reputation to be upright (who does not revise) or is weak (who cannot revise), he recommends the strategy (believe, not revise), that is the upper left cell. On the other hand, if king two is equal, or stronger, king one should adopt the strategy (not believe, revise), that is the lower right cell.

3. KAUTILYA ON ASYMMETRIC INFORMATION

Kautilya points out that for proper formulation and an effective implementation of a plan, a king must collect as much information as possible. However, he does ignore the cost of gathering information about other kingdoms and in protecting one's own privacy. Kautilya strongly believes that the possession of private information provides advantages over rivals. His (p. 177) advice to a king is: "No enemy shall know his secrets. He shall, however, know all his enemy's weaknesses. Like a tortoise, he shall draw in any limb of his that is exposed (1.15)."

Accordingly, he (p. 498) suggests, "A king shall have his agents in the courts of the enemy, the ally, the Middle and the Neutral kings to spy on the kings as well as their eighteen types of high officials (1.12)." He (p. 562) adds, "He shall always station envoys and clandestine agents in all states of the circle. These shall cultivate those acting against the interests of the conqueror and, while maintaining their own secrecy, destroy repeatedly such inimical persons (7.13)." Kautilya (p. 710) cautions, "The enemy can ascertain the

8 See Bowden (p. 200).

strength of the conqueror's army by counting it when they march in single file or from the quantity of fodder, food and bedding, or from the number of cooking fires, banners and weapons the army carries. Therefore, all of these shall be kept well hidden (10.2)." He (p. 576-577) suggests, "On the way to the place of his mission, the envoy shall: (i) establish good contacts with jungle chiefs, frontier officers, chief officers of the cities and countryside; (ii) observe, both the territory of his own king and that of the other king, the places suitable for stationing troops, fighting, support facilities and fall-back positions; and (iii) find out the size and extent of the other king's territory and forts, the strength of the economy, and the strong and weak points in its defenses (1.16)."

He provides several applications of asymmetric information. This section lists some of those applications and presents a detailed analysis of one of them, in the next section.

(i) Offering a lemon: (a) A King knows the quality of his land, which is poor but the buyer of the land does not know any thing about its quality. Kautilya (p. 621) states, "If a settlement of a tract is likely to entail heavy losses or expenditure, a king shall first sell the land, with the intention of reacquiring it, to one who will fail in the attempt at settlement. Such agreements shall remain verbal (7.11)."

(b) Similarly, Kautilya makes recommendations as to what kind of land to give to neutralize an antagonist. He (p. 612) suggests to give 'useless land' to 'enemies in the rear, such as jungle chiefs'; 'land not yielding a livelihood' to a 'forest thief' and 'land affording no shelter' to 'one who deserts the army' (7.16). The basic idea is the same that the giver knows the quality of the land but the receiver does not.

(ii) Treaty Negotiation: Kautilya displays the same bargaining skill in using the asymmetrical information in giving a hostage as part of a treaty. He (p. 599) states, "He who gives a treacherous minister or a treacherous son or daughter as a hostage outmanoeuvres (the receiver). The receiver is outmanoeuvred because the giver will strike without compunction at the weak point - i.e. the trust that the receiver has that the giver will not let the hostage come to harm (7.17)." The giver knows the uselessness of the hostage but the receiver does not have this information and therefore, accepts this as part of the negotiated treaty.

4 KAUTILYA ON BARGAINING WITH PRIVATE INFORMATION

Although Kautilya is not aware of the distinction between a strategic game and an extensive game, an example of an extensive game from *The Arthashastra* is presented below. This case deals with a situation in which a weak king faces an aggression from a strong king. Kautilya lays out five stages of an extensive game and provides an exhaustive list of possibilities at each stage. He develops the strategies and actions to be undertaken by the weak king to minimize his losses. According to him, the main objective of a weak king should be to explore such ways as to minimize his losses. He reviews the

prevailing views on how a weak king should respond to an attack by a stronger king. He (p. 664) states (the views of earlier thinkers), "Bharadvaja says that a weak king, when attacked by a stronger king, shall bend like a reed and surrender his all. For he who submits to a strong king, bows to Indra. (On the other hand) Vishalaksha says that a weak king shall fight with his resources, for only with valor can one surmount calamities. It is the dharma of a Kshatriya to fight, whether he wins or loses.

Kautilya disagrees with both. He, who surrenders all, lives only a life of despair, like a sheep that has strayed from its herd. On the other hand, one fighting with a tiny army perishes like one trying to cross the ocean without a boat. It is better to seek the protection of a powerful king or an impregnable fort. The weaker king shall offer, by one means or another, that which the other will, in any case, take by force. It is life that is worth preserving not wealth which, being impermanent, can be given up without regrets (12.1)."

Kautilya suggests that the strategies and actions to be undertaken by a weak king should depend on the type of the attacker. He (p. 664) lists three types of aggressors with their characteristics: "(i) The righteous aggressor is satisfied with submission. The weak yield to him, particularly when there is a danger from another enemy. (ii) The greedy aggressor is satisfied with seizing land and goods. The weak king shall give up wealth to him. (iii) The monstrous aggressor is satisfied only when he takes the land, goods, wives, sons and even the life of the defeated. A weak king may give up land and goods but shall not let himself be taken (12.1)."

Several points are worth noting. (a) It is interesting to point out that the solution suggested by Bharadvaja is identical to the one reached through backward induction, which is: the realization on the part of a weak king that he is going to lose ultimately, so why fight to begin with. It is comparable to the 'nuisance suits' in which backward induction leads the plaintiff to drop the case.

(b) The earlier thinkers suggest only two extreme choices, which according to Kautilya are undesirable. Whereas Kautilya suggests that the weak king should explore additional options such as seeking protection of a strong king or of a fort. He (p. 664) recommends, "When attacked by a strong king, a weak king shall seek the protection of a king who is stronger than the aggressor and who cannot be swayed by the diplomacy of the aggressor trying to outmanoeuvre the weak king (7.5)." He (p. 665) adds, "If a weak king cannot find any other king to protect him, he shall seek shelter in a fort; it shall be such that the aggressor, even with a large force, cannot cut off supplies of food, fodder, fuel and water and shall be so impregnable that the aggressor will suffer heavy losses and expenses if he tries to take it (7.15)."

(c) Moreover, before surrendering, the weak king should find out the 'type' of the aggressor. Since his life and honor may depend on it.

(d) Kautilya uses every opportunity to emphasize the importance ('like one trying to cross the ocean without a boat') of capital.

It seems that Kautilya deals extensively only with the third type of aggressor (i.e. the monstrous one). He lays out an extensive game plan to minimize a weak king's losses. He (pp 668-674) lists five stages of an aggression: (A) the strong king is getting ready to attack, (B) he starts the march, (C) he puts the siege on the fort, (D) weak king's defeat is imminent and (E) after a weak king gets defeated. Kautilya recommends various strategies and actions to be undertaken by a weak king at each stage to minimize his losses.

(A) Aggressor Planning to Attack: Kautilya (p. 668) states, "When an aggressor is on the point of attacking, the weak king has three choices: he can make peace with the aggressor, try to avert the attack by diplomacy or wage secret warfare. He shall try to win over the sections favorable to him in the aggressor's camp by means of conciliation and gifts and prevent treachery in his own camp by sowing dissension and use of force. At this stage the weak king may make peace without taking any action to harm the aggressor (12.1)."

(B) The Aggressor Starts the March: If the attempt to avert the attack fails and the aggressor starts the march. At this stage, Kautilya suggests that the weaker king shall consider: (a) suing for peace again, (b) reasoning with the aggressor about the soundness of the attack, (c) undermining the aggressor, (d) using the circle of kings, and (e) counter attack.

(a) Suing For Peace: It may be mentioned that Kautilya prefers peace to war. He (p. 568) recommends, "When the benefit accruing to kings under a treaty, irrespective of their status as the weaker, equal or stronger king, is fair to each one, peace by the agreement shall be preferred course of action; if the benefits are to be unfairly distributed, war is preferable (7.8)." It is also clear from another statement. Kautilya (p. 635) asserts, "That which entails small losses is a gain by diplomacy rather than by war (9.4)."

Kautilya (p. 668-669) suggests, "In negotiating for peace the weak king shall successively offer a quarter more of money and arms each day until the offer is accepted. If the weak king seeks peace on condition of surrendering a portion of his forces and the offer is accepted, he shall give dull and cowardly elephants and horses; if he has to give active and energetic animals, a long-acting poison shall be administered to them. If peace is sought on condition of paying money, the weak king shall give articles of high value for which there are no buyers, or forest produce that is unfit for use in war. If the condition is surrender of land, weak king shall give land that can be easily recovered, which has permanent enemies, which provides no shelter or which can only be settled with heavy losses and expenses (12.1)."

The importance of asymmetric information may be noted here since the weak king

has full information about his mammals and materials but the aggressor does not. Second, the administration of a 'poison pill' is an old idea to combat a hostile take-over. Kautilya always prefers friendly mergers than hostile take-overs. Third, he is aware of the illiquidity of high value items. Essentially, the weak king wants to make sure that his own resources are not used against him. Finally, it is significant to note that all the elements of bargaining are present in Kautilya's analysis: the frequency of an offer, the cost of rejecting an offer, the number of offers and the magnitude and the rate of adjustment in the offer. For example, just one offer is made every day. That means the aggressor has to maintain his forces for another day if he rejects the offer. Also it gives a signal to the aggressor that the weak king is not unduly frightened of him.

Kautilya's Implicit Model of Bargaining: Suppose the aggressor believes that π is the probability of a victory, the expected gain from the attack would be π Y (where Y = value of (land + loot + fort)).[9] Let the cost of the aggression, C = F + V where F is the fixed cost of preparation for the war, and V =s t, the variable cost which depends on the size of the army, s and the time, t during which it is on the move, that is, C = F + s t.

Expected initial net gain to the aggressor, $Z_0 = \pi Y - F$

If the weak king wants the stronger king to accept his initial offer, X_0, then

$$X_0 \geq Z_0 \tag{6}$$

For example, if t=0, π = 0.6, Y=1000, F = 20, the aggressor would expect that the initial offer by the weak king should be such that, $X_0 \geq 600 - 20 = 580$. If the weak king makes an initial offer, X_0 = 100, it is likely to be rejected by the aggressor. Kautilya suggests that 'the weak king shall successively offer a quarter more of money and arms each day, that is, $X_t = X_0 (1 + \theta)^t$., where X_0 is the initial offer and θ = 0.25. As an illustration, the weak king should increase the offer to 125 (= 100 (1 +0.25)) the next day and keep doing this until the offer is accepted. However, the net gain to the aggressor would be, $Z_t = 100 (1 + 0.25)^t - 20 - 5$ t, if s = 5 per day. Kautilya offers many other suggestions to the weak king to escape from this predicament.

(b) Reasoning With the Aggressor: According to Kautilya, a weak king should try to dissuade the aggressor from attacking by bringing out all the consequences of the aggression to him. He (p 669) suggests, "If the aggressor declines to conclude a peace treaty, the weak king shall try to persuade him to do so by reasoning with him. The arguments to be used are that the strong king (i) was being misled by friends in name

9. Drekmeier (1962, p. 157) observes, "By the age of empire (and implicit in the Arthashastra of Kautilya), war had ceased to be regarded as an aristocratic pastime having as its main objective military glory, and had come to be conceived as an instrument for strengthening the state and enriching its treasury. War is now a serious business, not to be undertaken lightly and without weighing carefully the probabilities of success and defeat."

but enemies in reality, (ii) was frightening all his allies, (iii) was promoting the interests of his enemies, and (iv) because of all this, he was risking his wealth and his life (12.2)."

(c) If the bargaining for peace fails, the weak king should consider undermining the aggressor, seeking support of his circle of kings and even contemplating a counter attack.

(d) The following argument is particularly worth noting. Kautilya (p. 670) states, "(The envoy, shall also point out the following). The weak king, who had many allies, would get many more with the things (forces, men, wealth or land) rejected by the strong king: together they could attack the strong king from all sides. While the weak king still enjoyed the support of his own circle of kings, the Middle king and the Neutral king, all these had abandoned the strong aggressor. For they were just waiting for him to start the war, incur heavy losses and expenses, be cut off from his allies and lose his control over his stronghold; then they would strike and overwhelm him (12.2)."

First, according to Kautilya, the weak king should let the aggressor know that there are alternative uses of the men and materials being offered to him. This is quite significant since it indicates that Kautilya is aware of the concept of opportunity cost. The weak king should negotiate with other kings also. He could present the rejected offer X_t to them or some other amount, M to win their support. So long $M \leq X_t$, he is better off by seeking support of his Circle of Kings.

Second, according to Kautilya, the weak king should try to convince the aggressor that his estimate of the probability of winning was too optimistic, more realistic probability, $\pi^* < \pi$ (his estimate). Similarly aggressor's estimate of the cost of war was unrealistically low since he was ignoring the losses of men and material in war, and also the loss resulting from the desertion of his allies. Clearly, the aggressor and the weak king have differences over the magnitudes of the probability of winning, the cost of operation and the duration of the operation.[10] The aggressor may be overestimating his power and the weak king may be underestimating the power of the aggressor. They reveal their private information through various rounds of negotiations. But in the mean time until their differences get resolved, the aggressor is expensing resources on keeping his forces moving.

(C) The Aggressor Puts the Siege: According to Kautilya, the weak king under siege should consider the following: (i) take some necessary precautions (such as to burn any grass and wood around the fort to improve visibility and deny the enemy any cover) as the aggressor approaches to lay the siege, (ii) use of tunnels (to move away men and materials), (iii) leave the fort without surrendering, (iv) deprive the besieger of men and material, and (v) keep trying to make peace.

10 Kennan and Wilson (1993) note, "In this view, some conflicts stem from differing expectations due to differing information. Each party's incentive to exploit its informational advantage prevents a quick, costless settlement." However, they add, "The idea that private information is a prime cause of costly conflict is currently an untested hypothesis."

(D) Defeat is Imminent: According to Kautilya (p. 673), "When the besieged king's resources are totally exhausted, he shall abandon the fort and escape, by secret tunnel, by digging a new passage or by breaching a wall of the fort. Alternatively, may mount a surprise night attack (12.5)."

(E) After the Defeat: If the weak king is unable to escape, he should hide inside the fort and wait for an opportunity to strike. Kautilya (p. 674) suggests, "If the fort is taken, the king shall hide himself in a sanctuary where plenty of food has been stored. He shall lie low until the victorious occupier forgets him and becomes careless (12.5)."

5. CONCLUSIONS

Magill and Quinzii (1996, p. 14) observe, "The classical economists however, provided no explicit description of the way economic activity over time is organized through contracts and that self-interested behavior may create difficulties for the functioning of a system based on contractual commitments is of much more recent origin." Quite the contrary, the problem of time inconsistency has been recognized and incorporated into decision-making, at least, by Kautilya. It is clear that Kautilya inherited very little from his predecessors. Credit for anticipating and dealing with the problem of credibility, and showing understanding that the possession of asymmetric information confers advantages in negotiations, goes solely to Kautilya. Additionally, the concept of coordination failure is also discernible in *The Arthashastra*. Kautilya (p. 193) asserts, "The armed forces- elephants, chariots, cavalry and infantry - shall each be under more than one chief. For, with many chiefs, mutual fear will prevent them from succumbing to the temptations of the enemy." According to him, the coordination problems become almost insurmountable if the number is more than four.

REFERENCES

Babcock, Linda and Loewenstein, George (1997), Explaining Bargaining Impasse: The Role of Self-serving Biases, *Journal of Economic Perspectives,* 109-126.

Blackburn, Keith and Christensen, Michael (1989), Monetary Policy and Policy Credibility, *Journal of Economic Literature*, March, 1-45.

Bowden, Roger J. (1989), *Statistical Games and Human Affairs*, Cambridge.

Camerer, Colin F. (1997), Progress in Behavioral Game Theory, *Journal of Economic Perspectives*, Fall, 167-188.

Drekmeier, Charles (1962), *Kingship And Community In Early India*, Stanford University Press, Stanford.

Gul, Faruk (1997), A Nobel Prize for Game Theorists: The Contributions of Harsanyi, Nash and Selten, *Journal of Economic Perspectives*, 159-174.

Kangle, R. P. (2000), *The Kautilya Arthasastra*, Part III, Motilal Banarsidass, Delhi.

Kautilya, Vishnugupta, (4th Century B. C.), *The Kautilya Arthasastra*, Part I, Sanskrit Text with a Glossary, R. P. Kangle, 2000, Motilal Banarsidass, Delhi.

Kautilya, Vishnugupta, (4th Century B. C.), *The Kautilya Arthasastra*, Part II, An English Translation with Critical and Explanatory Notes, R. P. Kangle, 2000, Motilal Banarsidass, Delhi.

Kautilya, Vishnugupta, (4th Century B. C.), *The Arthashastra*, Edited, Rearranged, Translated and Introduced by L. N. Rangarajan, Penguin Books, 1992, New Delhi, New York.

Kennan, John and Wilson Robert (1993), Bargaining with Private Information, *Journal of Economic Literature*, 45-104.

Kydland, Finn and Prescott, Edward C. (1977), Rules Rather Than Discretion: The Inconsistency of Optimal Plans, *Journal of Political Economy*, June, 473-491.

Mailath, George J. (1998), Do People Play Nash Equilibrium? Lessons from Evolutionary Game Theory, *Journal of Economic Literature September*, 1347-1374.

Myerson, Roger B. (1999), Nash Equilibrium and the History of Economic Theory, *Journal of Economic Literature*, 1067-1082.

Phlips, Louis (1988), *The Economics of Imperfect Information*, Cambridge University

Rasmusen, Eric (1994), *Games and Information*, Blackwell

Rogoff, Kenneth (1985), The Optimal Degree of Commitment to an Intermediate Monetary Target, *Quarterly Journal of Economics*, 1169-1189.

Sen, A. K. (1987), *On Ethics and Economics*, Blackwell, Oxford.

Sihag, Balbir S (2004), Kautilya on the Scope and Methodology of Accounting, Organizational Design and the Role of Ethics in Ancient India, *Accounting Historians Journal*, Vol. 31, No. 2: 124-148.

(2005), Kautilya on Public Goods and Taxation, *History of Political Economy*, Vol. 37, No. 4: 723-753.

Subramanian, V. K. (2000), *Maxims of Chanakya, Shakti Malik*, Abhinav Publications, New Delhi.

Svensson, Lars E. O. (1997), Optimal Inflation Targets, Conservative Central Banks, and Linear Inflation Contracts", *American Economic Review*, March, 98-114.

Varian, Hal R. (1992), *Microeconomic Analysis*, Third Ed., Norton.