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## The Pragmatism of Isaac Levi

Erik J. Olsson

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Isaac Levi's philosophical thinking has shown remarkable stability over the years. Basically, it all started with his first book, *Gambling with Truth*, which outlines a research program whose key element is the decision theoretic reconstruction of epistemology. Much of the rest of his work in epistemology has been devoted to extending and implementing this original program. With one important exception, there is little in his philosophical picture that has changed radically over the years. There have been changes, to be sure, but they have taken place at the level of detail rather than at the level of fundamental principle. The main exception is the issue of fallibilism. Starting out as a fallibilist, Levi became an infallibilist in the 70s'. The problem is that the corrigibility of our view suggests its fallibility: if we agree, as we must, that our view may change in the future, then it seems that we are never entitled to accept as true any claims of empirical substance now. But we do accept things as true now. Levi writes, in retrospect, that in the 60s' he unwittingly solved this problem for himself "by remaining in a fog of confusion" (Levi 1984, xiv), adding that by 1971 he had reached the conclusion that corrigibility and fallibility are best kept separate and, in particular, that endorsing corrigibilism is compatible with rejecting fallibilism. The paper "Truth, fallibility and the growth of knowledge" was the first expression of this important revision. It was accepted for publication in 1975 but not actually published until 1983. The paper was reprinted in Levi (1984).

Levi is a truly systematic philosopher. The purpose of the following text accordingly is to describe his position in a way that reveals its internal coherence. I intend to do so without diving too deeply into the technical details. I want to show how arguably most of Levi's work in epistemology rests on four cornerstones: the belief--doubt model, the injunction against roadblocks in the path of inquiry, the unity of reason thesis and the commitment--performance distinction. The first three elements undoubtedly belong to the tradition of American pragmatism. The commitment--performance distinction may have some support in Dewey's work. In any case, Levi's epistemological thinking cannot be appreciated fully unless these cornerstones of his pragmatism are kept firmly in mind. This way of describing Levi's pragmatism departs somewhat from how Levi himself usually explains it, and I hope that it will prove useful as providing an alternative perspective from which to approach his epistemological work. The second purpose is to provide a conceptual map of the papers in this collection. I will try to indicate how the themes they address touch upon central issues in Levi's philosophical thinking.

### 1. The belief--doubt model

According to the Cartesian tradition in epistemology, we should start out in epistemology by doubting everything that can coherently be questioned. These efforts will, it is maintained, lead to a point where doubt is no longer possible, to a solid foundation in which our further beliefs can somehow be grounded. The recommendation to engage in methodological doubt is characteristically combined with an account of the latter according to which the mere logical possibility of error is sufficient to render a claim doubtful. The epistemological task, then, is taken to be one of recovering as many of our old beliefs as possible from a foundation that contains little more than logical trivialities.

Charles Sanders Peirce famously rejected the Cartesian epistemological picture, insisting that coherent doubtfulness is a much more exclusive property than Descartes would

have us believe. All our beliefs, in so far as they are genuine convictions of ours, are things we accept as true without a moment's hesitation. There is, on our part, no "real and living doubt" that they are true. It is of course logically possible that a given empirical belief of ours be false. But this, Peirce thought, is beside the point. The mere logical possibility of error does not render a claim genuinely doubtful. By the same token, putting down a sentence in the interrogative form does not occasion real as opposed to "paper" doubt. We need positive reasons to doubt. Usually, doubt is occasioned by surprising experience.

Underlying Peirce's criticism of Cartesian epistemology is his belief--doubt model according to which belief is an idle state which is satisfactory as it is. There is no point in inquiring further because there is no serious possibility that things are otherwise than we believe them to be. The matter is already settled. The intellectually pleasant state of belief can be disrupted, usually by the occurrence of an unexpected event of some sort, in which case the inquirer enters a state of doubt. The latter is a disharmonious state which the inquirer tries to avoid by engaging in inquiry, the goal of which is at least partly the fixation of a new belief.

The belief--doubt model is a central component of Isaac Levi's pragmatist epistemology. Levi insists, as Peirce did before him, that the beliefs we already entertain are in no need of justification. That is to say, there is no need for a person to justify his full beliefs *to herself*. According to the Cartesian line of thought, by contrast, a person's current beliefs do need to be justified even to that person herself.

To take an example from Levi's latest book, *Mild Contraction*: Before the invasion of Iraq, Bush, Chaney and Rumsfeld were presumably not in doubt as to whether Saddam were in possession of weapons of mass destruction. This matter was considered settled already. There was no point in letting the weapons inspectors continue their mission because there was no serious possibility that he would lack such weapons. If the Peircean belief--doubt model is correct, Bush and his associates did not at that point have to justify their belief in the existence of WMDs to themselves.

It is of course compatible with Peirce's view that a person may be in a situation that calls for her to justify her belief *to others*. While Bush and his associates did not at the time have to justify their belief in Saddam's possession of WMDs to themselves, they arguably had to justify it to the general public and to the UN. We would not contradict Peirce if we were to claim in addition that a person should be able to justify any decision to *change* her convictions – even to herself. Many of those who initially believed fully that Saddam had WMDs believe now, with hindsight, that he did not have any after all. From what I have heard, we can count Bush and his associates to this lot. Be that as it may. At one point these people changed their convictions. This change, like any other, can itself be subject to justification. From this point of view, one of the major challenges facing epistemology is to spell out the conditions under which a given change in view is justified.

Cartesian epistemology is closely related to what Levi calls pedigree epistemology. Whereas Cartesian epistemology is first and foremost occupied with the question of what one can coherently and legitimately doubt, pedigree epistemology more directly concerns the nature of knowledge. What is common to pedigree epistemologists is that they are in a sense backwards looking. Roughly speaking, they do not focus on how a given belief could be useful in the future but rather on how that belief was acquired in the past (Levi 1980, p. 1). As I understand Levi, the majority of contemporary epistemological theories qualify as pedigree epistemologies. Reliabilists, for example, insist that a belief qualifies as knowledge only if it was reliably acquired. Foundationalists, on the other hand, require that beliefs should be traceable to impeccable first principles. What reliabilists and foundationalists have in common is their preoccupation with pedigree of one sort or the other. Levi, by contrast, proposes that “[e]pistemologists ought to care for the improvement of knowledge rather than its pedigree.” (ibid.)

In my paper on the lottery paradox in the present volume, I question Levi's reasons for rejecting all forms of pedigree epistemology. Once the social aspect of knowledge is taken

into account, a concern with pedigree is perfectly in order, or so I argue. The missing social dimension of knowledge is explored from a slightly different perspective in Philip Kitcher's contribution. Kitcher argues that Levi's approach needs to be extended to recognize the intricate ways in which social factors affect the modification of our beliefs.

As Levi has observed, the belief--doubt model has far--reaching consequences for the regulative role of truth in inquiry. It is commonly believed that what an inquirer should strive for, at a given point in her inquiries, is to arrive at the true, complete theory of the world, or at least of the relevant part of it that she takes interest in. According to the belief--doubt model, the inquirer is absolutely sure at that point that her current beliefs are true. This means that from her perspective, the true, complete theory of the world must form a superset of her current beliefs. It follows that if the inquirer gives up anything currently fully believed, she incurs a risk that she will not restore it at any point further down the line of inquiry. Indeed, for all she knows, she may even end up accepting its negation. In either case, she would undermine the effort to converge on the true, complete theory. Hence the only kind of belief revision she can justifiably engage in is expansion – the mere addition of new beliefs. But this is absurd, for it means that we can never come to doubt what we once believed to be true. Our beliefs become incorrigible.

Since Peirce subscribed to this view concerning the regulative role of truth -- which Levi calls "messianic realism" --, to the corrigibility of our view and also, of course, to the belief--doubt model, there is a serious conflict in his doctrine. Levi has sought to avoid trouble by rejecting Peirce's messianic realism. According to Levi's own "secular realism," what an inquirer should strive for at a given point in her inquiries is merely to obtain new true (error free) information at the next step of inquiry: "inquirers should be concerned to avoid error as judged by the current doctrine only for changes of the current doctrine and not for any subsequent changes." (Levi 1998, p. 198) Thus, as for avoidance of error it is of no concern to the inquirer what happens further down the line of inquiry. In particular, it is of no concern to

her whether or not a proposition once believed to be true will later fail to be believed or even be denied. Yet -- and this turns out to be crucial -- when we assess informational value, as opposed to avoidance of error, we do have the option of looking further down the line of inquiry:

This view [secular realism] does, indeed, undermine the idea of scientific progress as progress toward the truth. It need not, however, undermine all conceptions of scientific progress. Inquiry does not get off the ground without demands for information, programs for research that aim, among other things, to obtain more comprehensive and informationally more valuable doctrines. Our goals in seeking more information are, on the view I have been advancing, far from myopic. We do look ahead many steps down the line. There is nothing in secular realism that mandates myopia with respects to demands for valuable information but only with respect to avoidance of error. (Levi 1991, p. 163)

Hence we may, at a given point, anticipate that a very comprehensive and informationally valuable state of full belief can best be reached by first contracting parts of our present doctrine so as to make room for subsequent improvements. Secular realism, as opposed to the messianic variety, can be combined with a commitment to the corrigibility of our view.

Levi's interpretation of Peirce's belief--doubt model receives scrutiny in Cheryl Misak's contribution to this volume. She argues that the gulf between Levi's position and Peirce's is not as wide as Levi takes it to be. André Fuhrmann's article in this collection focuses on Levi's critical view of truth in the limit and its place in inquiry. In Fuhrmann's view, absolute truth does play a role in inquiry, viz., to provide a reason for changing one's theoretical preferences.

2. The injunction against roadblocks in the path of inquiry

Another pragmatist component of Levi's thought that contributes to its distinctive character is the injunction against placing roadblocks in the path of inquiry. This notion, too, derives from Peirce, who thought that his principle "deserves to be inscribed upon every wall of the city of philosophy." (Peirce 1955, p. 54) Peirce eloquently defends his principle in the following passage:

Although it is better to be methodological in our investigations, and to consider the economics of research, yet there is no positive sin against logic in trying any theory which may come into our heads, so long as it is adopted in such a sense as to permit the investigation to go on unimpeded and undiscouraged. On the other hand, to set up a philosophy which barricades the road of further advance toward the truth is the one unpardonable offence in reasoning, as it is also the one to which metaphysicians have in all ages shown themselves the most addicted. (ibid.)

It is interesting to study Peirce's list of possible offences against his principle. The first is to claim absolute certainty of matters of fact. The history of science reveals that many theories that were once taken to be the absolute truth later proved to be plainly false. Therefore, Peirce reasons, we should refrain from making absolute assertions now. As Levi has observed, Peirce's fallibilism -- of which the argument just given is an expression -- is in conflict with his belief--doubt model. For it follows from the latter that we must judge our current beliefs to be absolutely true. Moreover, pessimistic induction from the history of science is, on closer scrutiny, incoherent:

Keep in mind that the judgment that the past record of inquiry is strewn with error (as well as truth) is predicated on the assumption that the current perspective is error free. For if the current perspective is not error free, on what basis do we judge the past record to be strewn



with error? How can we judge that the current doctrine contains error by appealing to the premise contained in the current doctrine that false beliefs appear in past inquiry? What principle of selectivity entitles us to judge this element of the current doctrine true and insist that the rest contains error? Surely we ought to respect the total (relevant) evidence requirement. Here the total evidence is constituted by the current doctrine. (Levi 1998, p. 197)

Levi has sought to combine infallibilism (the rejection of fallibilism) with corrigibilism: we can be absolutely sure that our current beliefs are true and yet acknowledge that new evidence may be forthcoming that would make us change our view. Clearly, once we acknowledge the corrigibility of our view, absolute certainty is no obstacle in the path of inquiry. But for Levi's position to be convincing it needs to be shown that one can theorize sensibly about belief correction and, above all, belief contraction. Hence, devising a convincing theory of belief contraction becomes an urgent project to which Levi has contributed in a number of papers and books. For detailed accounts, see Levi (1991, 1996). *Mild Contraction* is entirely devoted to this topic.

The second offence is one that Levi presumably could subscribe to without any qualifications. It lies in maintaining that this or that can never be known. Peirce's compelling example concerns August Comte's contention that mankind would forever remain deprived of knowledge of the chemical composition of the fixed stars. But, as Peirce goes on to remark, "the ink was scarcely dry upon the printed page before the spectroscope was discovered and that which he had deemed absolutely unknowable was well on the way of getting ascertained." (Peirce 1955, p. 55) One should not make risky assertions about what may or may not be known in the future. Clearly, this is but an aspect of the corrigibility of our beliefs to which Levi has always been firmly committed.

The third "philosophical stratagem for cutting off inquiry" (ibid., p. 55) consists in maintaining that there are fundamental facts that are utterly inexplicable because there is

nothing beneath them to know. Against this strategy, Peirce holds that it is no explanation of a fact to pronounce it as inexplicable and also that no reasoning could ever justify such a conclusion. Finally, we should not, in Peirce's view, hold that a law or truth has found its last and perfect formulation "and especially that the ordinary and usual course of nature never can be broken through." (ibid., p. 56) In practical terms this means that one should never engage in "absolute denial of an unusual phenomenon." (ibid.) This point is closely related to his first contention about absolute assertion and is for similar reasons not obviously correct.

Levi has put Peirce's no roadblocks principle to intriguing new uses. First and foremost, it serves to motivate the structure of what he calls conceptual frameworks. An inquirer's conceptual framework at a given time is the class of all states of full belief that are, in some weak sense, available for the inquirer at that time. If  $K_1$  and  $K_2$  are such potential states of full beliefs, then, Levi maintains, their join is also a potential state of full belief. The join consists of exactly those things that  $K_1$  and  $K_2$  have in common. Being in a belief state corresponding to the join of  $K_1$  and  $K_2$  is suspending judgment between these two states. The existence of a potential belief state representing the join is justified as follows:

... consider two inquirer,  $X$  and  $Y$ , sharing a common framework.  $X$  is in state  $K_x$  and  $Y$  is in state  $K_y$ . On some occasions it may be desirable for both  $X$  and  $Y$  to modify their views by adopting a belief state representing the shared agreement or common ground between them. To do this entails that they both give up informational value and, hence, incur a cost that they seek to minimize. In particular, they do not want to give up any more information than will be needed to bring them into agreement. The assumption of the existence of the join of  $K_x$  and  $K_y$  allows for the conceptual availability of such a move to both  $X$  and  $Y$ . It does not claim that exercising the option is always or even sometimes justifiable. However, we should not preclude such moves at the outset by denying that belief states representing such shared

agreements are conceptually available. To do that violates the Peircean injunction against placing roadblocks in the path of inquiry. (Levi 1991, p. 13)

The existence of the meet of two potential states of full belief is similarly justified with reference to Peirce's no roadblocks principle.

The notion that it is always possible to suspend judgment between two states of full belief or theories is central in Levi's criticism of the incommensurability thesis of Kuhn and Feyerabend. As Levi interprets these authors, they hold that conflicting theories may be incommensurable in the sense that there is no common ground from the point of view of which their relative merits could be neutrally assessed. This is a view which Levi rejects:

This join of  $K_1$  and  $K_2$  is the state of suspense that is the common ground to which X in state  $K_1$  and Y in state  $K_2$  could move if they were concerned to engage in joint inquiry that begged no questions against the other's point of view. To deny the availability of such a potential state of full beliefs (as authors writing in the tradition of Feyerabend and Kuhn often do) is to place roadblocks in the path of inquiry. Pragmatists will condone this practice only in the face of an impossibility theorem. (Levi 2002, p. 214)

Similarly, Levi wrote in an earlier work that "[t]o rule out in advance of inquiry the possibility of resolution by insisting that it involves a choice between incommensurables is to place roadblocks in the path of inquiry." (Levi 1984, p. 141)

In addition, the principle that suspension of judgment is always an option underlies Levi's view that certain evaluations of hypotheses lack truth value. This goes, in particular, for appraisals of truth value bearing hypotheses with respect to subjective probability:

Suppose to the contrary that such appraisal has truth value. That is to say, if X assigns h degree of credence r, he fully believes that h is objectively probable (in some sense) to degree r.

Consider now a situation where X suspends judgments as to whether the degree of objective probability that h is 0.4 or 0.6. Let y be his degree of credence that the objective probability is 0.4 and  $1-y$  that the objective probability is 0.6. X's degree of credence that h is, under these circumstances, equal to  $0.4y + (1-y)0.6$ . As long as y is positive and less than 1, X's degree of credence that h must be different from 0.4 and from 0.6. But this means that X must fully believe that the degree of credence is different from 0.4 and from 0.6 counter to the assumption that he is in suspense between these two rivals. (Levi 1984, pp. 156--7)

The common structure of Levi's striking arguments that this or that evaluation lacks truth value is that, if they have truth value, genuine suspension of judgment is not possible. But this runs counter to Peirce's injunction against obstructing inquiry. Hence, such evaluations lack truth value.

Levi has sought to motivate an alternative view of doubt that applies to attitudes that lack truth values. As for probability judgment, he has argued that we should be prepared to adopt credal states of hypotheses which are indeterminate and which allow many diverse distributions to be permissible. The set of permissible distributions should be a convex set: it should contain any linear combination of distributions in the set. Henry E. Kyburg's article in the present volume investigates the relation between convexity and conditionalization where the latter is taken as a principle for how to update one's probabilities in the face of new evidence. In his paper, Nils-Eric Sahlin defends Levi's way of representing probabilistic ignorance as part of a Socratic approach to decision making whereby experts can gain trust by admitting and communicating uncertainty. Probability is also the topic of D. H. Mellor's contribution. The problem here is how knowledge of chances determines probability

judgments to be used in practical deliberation and scientific inquiry. Mellor argues that Levi's view on this subject differs less than he thinks from its rivals. Wolfgang Spohn's paper is concerned more generally with how to conceptualize degree of belief and the relation between graded and absolute belief. Rejecting a probabilistic rendering of degree of belief, Spohn proposes an account in terms of so-called ranking functions. His article is devoted to spelling out the main differences between this approach and Levi's.

Evaluations of hypotheses with respect to serious possibility are also said to lack truth value. This claim plays a pivotal role in Levi's highly original criticism of modal realism. Levi proposes that the relevant notion of possibility is that of serious possibility. This notion is subject--relative. A proposition *p* is seriously possible for subject (at a given time) if and only if *p* is consistent with her full beliefs (at that time). In relating the notion of possibility to an inquiring subject, Levi is making it potentially important in theoretical inquiry and practical deliberation. Now let us grant that evaluations of hypotheses with respect to serious possibility lack truth values. It would follow that counterfactual conditionals construed as hypothetical appraisals with respect to serious possibility lack truth value as well. In Levi's view, counterfactuals have truth values only to the extent that they are construed not as evaluations but as descriptions of the agent's conditional evaluations with respect to serious possibility. Against this background, the problem with Jaakko Hintikka's and David Lewis's approaches is that "[b]oth views imply that subjunctive conditionals have truth values and, moreover, that the truth conditions make no reference to the subjective state of the utterers (except, of course, insofar as such subjective states are described in the antecedents of consequents of such conditionals)." (Levi 1984, p. 157) Either these theorists grant that the relevant notion of possibility is serious possibility, in which case they cannot assign truth values to counterfactuals in the way they do, or they deny that the relevant notion of possibility is serious possibility, in which case it is unclear how their theories can be of any relevance to inquiry and deliberation:

I cannot prove conclusively that realistically construed notion of de dicto modality both conditional and categorical are *verdoppelte Metaphysik*. But the onus is on those who deny this to explain why the introduction of such conceptions is not gratuitous insofar as we are concerned with questions pertaining to epistemology, scientific inquiry and practical deliberation. (ibid.)

Finally, Levi has applied Peirce's injunction against roadblocks in his discussion of the so-called rationality assumptions built into the conditions that entail Arrow's impossibility theorem. Here, too, the admissibility of suspending judgment plays a key role in the argumentation. For the details, see Levi (1984, pp. 247--70).

Who would have thought initially that Peirce's injunction against roadblocks should have had repercussions for the interpretation of counterfactual conditionals or Arrow's theorem? Levi should be credited for exploring the consequences of some pragmatist principles in greater depth and more consistently than others have done before him. Thanks to him we are in a better position to appreciate the perhaps surprising force of the pragmatist tradition of thought.

In his note in the present volume, Bengt Hansson argues that while fallibility and corrigibility are indeed independent notions, infallible items of knowledge should not be identified with those that are maximally certain. Another issue of interest in this connection concerns inconsistency. Levi thinks that the inconsistent state of full belief should be part of every conceptual framework. Once inconsistent, our state of full belief cannot function properly as a standard of serious possibility. There is nothing in terms of which we can distinguish those possibilities that are serious from those that are not. Our standard of serious possibility has broken down. A problem which Levi until just recently had not given the attention it deserves is that there seems to be no rational way to escape from inconsistency.

For any such way would have to be based on the current state of full belief. But if the current state is inconsistent it is useless for purposes of inquiry and deliberation. In particular, it is useless for inquiry into how to get rid of the inconsistency. Inconsistency, then, is the ultimate roadblock of inquiry. It is “epistemic hell,” to use a phrase coined by Peter Gärdenfors (1988). In response to this sort of criticism, as leveled by myself in Olsson (2003), Levi has recently changed his theory of contraction. His new position is that contraction from inconsistency must be construed not as a matter of deliberation but as a matter of routine (Levi 2003, 2004). An alternative strategy is explored in Otávio Bueno’s contribution to this volume. Bueno argues that Levi’s position could be strengthened by making room for inconsistency in a way which, he believes, does not jeopardize any commitment to pragmatism.

### 3. The unity of practical and theoretical reasoning

The third cornerstone of Levi’s pragmatism concerns the connection between practical deliberation and theoretical inquiry. Levi is committed to practical and theoretical reasoning being in a deep sense one and the same. As we will see, his position contains several distinctive components that should accordingly be given separate attention.

According to popular opinion the distinctive mark of scientific as opposed to practical matters is that science is value free or value neutral. Against this, Levi maintains that science inquiries are just as value laden as are practical investigations. Scientists *qua* scientists must make value judgments. The difference is that the values that should be promoted in scientific inquiries are different from, and irreducible to, the practical values that figure in political, economic, moral or aesthetic deliberations: “[t]he reconstructed version of value--neutrality that I favor denies this reductionist view and insists that scientific inquiries seek or ought to seek to promote values and goals distinctive of the scientific enterprise.” (Levi 1984, p. ix) As scientific or cognitive values Levi counts logical strength, simplicity, explanatory power, and the like. They are all subsumable under the umbrella concept of informational value.

Does the autonomy of scientific values create a questionable dualism between theory and practice? Levi's answer is in the negative. First of all, both kinds of activity are goal-driven. Just as proposals for how to act should be evaluated in terms of efficiency in realizing given practical ends, so too proposals for how to change one's theory should be evaluated in terms of efficiency in realizing given cognitive ends.

At one point Levi goes as far as claiming that the goal-driven nature of theoretical rationality makes such rationality but a species of practical rationality:

... the classical pragmatists ... certainly were in favor of an integrated understanding of practical and theoretical rationality. Science differs from what Dewey called 'common sense' in its goals. As a consequence, it also differs in its methods. But insofar as rationality plays a role, it is means--end rationality in both cases. That is to say, it is practical rationality. (Levi 2004a, p. 244)

In Dewey's terminology, common sense deliberation focuses on practical issues. Up to this point "practical rationality" has referred to the sort of rationality that aims at the choice of a practical action, whereas "theoretical rationality" has referred, roughly, to the sort of rationality that aims at the fixation of belief. Yet in the passage just quoted, Levi is using the term "practical rationality" in the new sense of "goal--driven rationality." To call all goal-driven rationality "practical" does not add anything, except conceptual confusion, to the point already made that both rationality aiming at the choice of practical action and rationality aiming at the settlement of opinion are goal--driven activities.

At any rate, Levi does not merely want to suggest that practical deliberation and theoretical inquiry are similar in the sense that both are goal--driven; he also proposes that the same principles are at work in both cases: "the principles of rational choice or rational goal attainment governing deliberation in science ought to be the same as those regulating the



rational attainment of moral, political, economic, and other practical objectives.” (Levi 1980, pp. 71--2) Hence, “[t]he difference between theoretical inquiry and practical deliberation is a difference in goals and not a difference in the criteria for rational choice that regulate efforts to realize these goals.” (Levi 1984, p. 72) What Levi is suggesting is that there is a far-reaching *structural* unity between practical and theoretical inquiries. In his own words, “[w]hat is ‘pragmatic’ about pragmatism is the recognition of a common structure to practical deliberation and cognitive inquiry in spite of the diversity of aims and values that may be promoted in diverse deliberations and inquiries.” (Levi 1991, p. 78)

In concrete terms, the structural unity thesis suggests that it may be worthwhile to apply Bayesian decision theory not only in the practical realm but also in the cognitive domain. Levi has made substantial contributions to this area of research ever since the 60s’. His elegant Bayesian account of inductive acceptance, first formulated in *Gambling with Truth* and slightly modified in “Information and Inference” (Levi 1984, pp. 51--69), is a milestone on this path of philosophical inquiry. This account has interesting implications for the lottery paradox and other long--standing problems of induction. In *Fixation* and later works, he has addressed the problem of reconstructing belief contraction, too, as a problem of rational choice. The decision theoretic perspective has substantial consequences for contraction as well. It entails, for example, that if the inquirer in belief state  $K$  retracts a belief by entering a new weaker belief state  $K'$ , then contracting to  $K'$  must have been one of the inquirer’s options while in  $K$ . Several other theories of contraction, among them the celebrated partial meet approach of Alchourrón, Gärdenfors and Makinson (1985), fail to comply with this simple rule.

An inquirer’s standard of serious possibility is constituted by his full beliefs. Everything that is compatible with the inquirer’s full beliefs is judged seriously possible from his point of view. A further aspect of Levi’s unity of reason thesis is the claim that the standard of serious possibility used in cognitive inquiries should be the same as that used in

practical deliberations: “rational X should, during any minimal interval of time, be committed to a single standard for serious possibility both for theoretical inquiry and for practical deliberation.” (Levi 1980, p. 16) An inquirer should refrain from using one set of background assumptions or full beliefs in theoretical matters and another set in practical matters. A double standard of serious possibility should be avoided.

As noted in Levi (1980, pp. 16--17), Peirce seems to have taken the opposite view:

If a proposition is to be applied to action, it has to be embraced or believed without reservation. There is no room for doubt, which can only paralyze action. But the scientific spirit requires a man to be at all times ready to dump his whole cartload of beliefs, the moment experience is against them. The desire to learn forbids him to be perfectly cocksure that he knows already ... Thus the real character of science is destroyed as soon as it is made an adjunct to conduct; and especially all progress in the inductive sciences is brought to a standstill. (Peirce 1955, pp. 46--7)

Apparently, Peirce is here implying that in practical deliberation some logical possibilities are discounted as not being seriously possible. He is also saying that in scientific inquiry all logical possibilities are serious. It follows that the standard for serious possibility used in practical deliberation cannot coincide with that employed in theoretical inquiry. Yet, this reading of Peirce as advocating double standards of serious possibility can be questioned, and Levi has recently stated (in personal communication) that he now finds this interpretation implausible given the context in which the remark was made. For more on this, see Cheryl Misak’s discussion of the gap between science and vital matters in her contribution to this volume. In his contribution to this volume, Mark Kaplan argues that whether a person knows that something is the case can be affected by what is practically at stake if she acts on her belief in her current circumstances. By raising the stakes one can apparently make one’s

knowledge go away. This, if correct, would shed doubt on Levi's position regarding the autonomy of theoretical reasoning vis-à-vis practical reasoning.

Two authors write on the topic of abduction, which Levi, again following Peirce, conceives of as the initial stage in theoretical inquiry and practical deliberation at which the alternative answers to the inquirer's question are identified. Maurice Pagnucco provides an overview of Levi's theory of abduction, comparing it with other accounts, primarily with those that have been devised by researchers in artificial intelligence. Levi's conception turns out to be quite distinct from those other accounts. In my note on potential answers, I object to Levi's proposal to view all alternative hypotheses of relevance to a given question as being also potential answers to that question. Roughly speaking, hypotheses of a disjunctive nature, while being of relevance in inquiry, are not in any interesting sense potential answers.

Several authors have chosen to comment on Levi's decision theoretic account of epistemology. In my paper on the lottery paradox I argue that while Levi's solution works very well considered in isolation, combing it with Levi's individualistic conception of knowledge leads to the uncomfortable result that one can know that one's ticket will not win. Hans Rott's contains a concise summary of Levi's account of belief expansion and contraction together with some penetrating criticisms. Levi's theory of contraction and sequential change is investigated at length in Horacio Arló Costa's article which aims at mending bridges between the decision theoretic perspective and other contemporary work in belief change done mostly by computer scientists. It is worth noting that both Rott and Arló Costa base their commentaries on Levi's most recent book, *Mild Contraction*, which contains an account of contraction that differs in important respects from his earlier theory.

## 2. The commitment--performance distinction

While the classical pragmatists differed as to what inquirers should strive for more precisely, they arguably shared the view that they need to justify changes in view by showing that one

change is better than the alternatives for the purposes of promoting the goals of the given inquiry. An activity cannot be goal--driven unless the agent is capable of adjusting her behavior so as to promote the goal she is trying to attain. Changes in view should be no exception to this rule. Suppose, however, that beliefs are merely dispositions to linguistic and other bodily behavior, as many respectable philosophers have indeed argued. Then the question of how to justify changes in view does not even arise, as the inquirer lacks the control necessary to be held accountable for such changes. If, as Quine and others maintain, coming to believe is merely a matter of responding in a certain ways to external stimulation, pragmatism is seriously in error.

Levi's solution to this problem is one of his most original contributions to American pragmatism. His proposal is that we distinguish between changes in commitment and changes in performance. As Levi reads Dewey, the latter was primarily interested in changes in commitment. Such changes can plausibly be subject to the agent's direct control and they are therefore the sort of thing one would typically need to justify. In the case of beliefs, the commitments of relevance are doxastic commitments, i.e., commitments to believe something. A commitment to believe can be seen as a promise to believe (although there are certain important differences as well, see Levi (2002, p. 228)).

Changing a doxastic commitment is one thing, implementing it quite another. The agent may fail in his performance to live up to his commitments. He may fail to believe what he is committed to believe. This can happen for many different reasons. Levi mentions, as possible causes, lack of calculating capacity, subjection to an emotional storm or distraction from self--critical reflection.

To take an example, a person may believe initially that the French city of Nancy is south of Hamburg without entertaining any particular view about the location of Helsinki. Upon consulting a map she comes to believe that Helsinki is north of Hamburg. That would count as a change in doxastic commitment. A new commitment about the location of Helsinki

has been added to her old stock of commitments. Her two geographical commitments together entail the further commitment to believe that Nancy is south of Helsinki. Suppose however that the person does not at first realize that she is committed to believing that Nancy is south of Helsinki. At a later point she realizes this. This change would count as a mere change in performance. In believing that Nancy is south of Helsinki she is closer than she was before to fulfilling all her doxastic commitments.

Levi's theory of belief revision is a theory of commitment change, not a theory of performance change. The states of full belief in his theory are ideal states in which all doxastic commitments are realized. They should be seen as equilibrium states similar to the objects studied by classical thermodynamics and economics. The theory describes how changes take place from one equilibrium state to another. It is silent about how to go from a non-equilibrium state to an equilibrium state. This problem is deferred to the separate study of performance change.

Nevertheless, I for one fail to see how invoking the commitment--performance distinction could serve to neutralize the anti-voluntaristic objection that was raised at the beginning of this section. A theory of commitment change is empty unless taking on a commitment to believe is at least positively relevant to actually implementing the commitment. If there were no such relation between commitment and performance, Levi's theory would lack all significance for actual inquiry. This would mean that Levi's reply to Quine and other dispositionalists is partly question-begging, as they would presumably reject the notion that deciding to believe is positively relevant to actually believing. Still, for those who are already sympathetic to this notion the commitment--performance distinction does make a lot of sense.

In fairness to Levi it should be mentioned that voluntarism is not the only issue he intends to tackle with his distinction. He also believes that his theory has the virtue of reducing two mysteries for naturalism to one. The two mysteries are the obstacles to

naturalism presented by the naturalistic fallacy and the gap between nature and meaning. By taking attitudes in general to be commitments, there is, he submits, hope that the question of meaning can be understood as a question about values. Another advantage he sees in this manner of theorizing is that it enables us to give up “the pretence that principles of rationality are primarily used for the purpose of explanation and prediction.” (Levi 2002, p. 223) There is much more to be said about this than the space allocated to this introduction allows. The interested reader should consult Levi’s 1997 book *The Covenant of Reason*. Levi (2002) is a good summary of Levi’s view on rationality and the commitment--performance distinction.

Levi’s preoccupation with commitment rather than performance represents one sense in which his epistemological picture abstracts from the vagaries of actual human inquiry. Sven Ove Hansson’s paper in this volume seeks to identify the different idealizations that are involved in Levi’s theorizing. According to Levi, principles of rationality -- be they theoretical or practical -- serve two different purposes: they regulate changes in commitment and performance. They provide criteria by means of which changes in commitment can be evaluated, and they indicate the standards to which our performance should conform (Levi 1997, p. 16). Several papers address Levi’s theory of rationality. A pragmatic argument for a principle is an argument that appeals to the desirable/undesirable consequences of that principle’s satisfaction/violation. Wlodek Rabinowicz’ paper focuses on pragmatic arguments for various rationality constraints on beliefs and preferences, and on Levi’s view of the status of such argument. In his contribution, Wolfram Hinzen confronts Levi’s view on rationality with another, more naturalistic account. Naturalism and commitment are also central themes in Akeel Bilgrami’s article in which these issues are discussed in the context of psychoanalytic theory. Bilgrami argues, among other things, that the concept of a neurosis is inherently normative, involving a failure of one’s dispositions to accord with one’s commitments. The general nature of dispositions is the central issue in Johannes Persson’s

contribution, which compares Levi's view -- as first stated in an early joint paper with Sydney Morgenbesser (1964) -- with that of Jon Elster.

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