

CONTENTS—ISSUES 19 & 20

Articles

- Generalizing and Normalizing Quine's Epistemology**
Cheng-hung Tsai—National Taiwan University.....3
- The Inadequacy of Kant's View of Moral Worth**
Scott McElreath—Peace College.....23
- Relation R and the Question of Causation**
G. J. Shipley43
- Natural Kind Terms are Similar to Proper Names in Being World-Independent**
Ari Maunu—University of Turku51
- Two Concepts of Inquiry**
Robert Talisse—Vanderbilt University.....69

Book Reviews

- Jonathan Tallant—Descartes Method of Doubt.....83**
- Andy Hamilton—The Transhistorical Image.....85**
- James Clarke—Kant's Search for the Supreme Principle of Morality.....91**
- EVENTS.....94**

Generalizing and Normalizing Quine's Epistemology

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Abstract

The aim of this paper is twofold: First, to generalize Quine's epistemology, to show that what Quine refutes for traditional epistemology is not only Cartesian foundationalism and Carnapian reductionism, but also any epistemological program if it takes atomic verificationist semantics or supernaturalism, which are rooted in the linguistic/factual distinction of individual sentences, as its underlying system. Thus, we will see that the range of naturalization in the Quinean sense is not as narrow as his critics think. Second, to normalize Quine's epistemology, to explain in what sense Quinean naturalized epistemology is normative. The reason I maintain that critics *miss the point* of Quinean naturalized epistemology is that they do not appreciate the close connection between Quine's naturalistic approach and his holistic approach to epistemology. To show this I shall reconstruct Quine's argument for naturalizing epistemology within his systematic philosophy, and focus specifically on his holism and its applications, on which Quine relies both in arguing against traditional epistemology, and in supporting his theses of underdetermination of physical theory and indeterminacy of translation. This is the key to understanding the scope and the normativity of Quine's epistemology. In the conclusion I will point out what the *genuine* problems are for Quinean naturalized epistemology.

In his well known essay *Epistemology Naturalized* of 1969, W. V. Quine argues that epistemology should be reconstructed as a branch of natural science, an empirical study of the relation between sensory stimulations and scientific theory formulations. Two major objections that have been raised against Quine's argument and his approach to epistemology are: (i) his characterization of traditional epistemology is misconceived, and (ii) his recommendation of naturalizing epistemology neglects the notion of epistemic justification, and hence the evaluative strain in epistemology. I maintain that such criticisms do not appreciate the close connection between Quine's naturalistic approach and his holistic approach to epistemology. To show this, I will reconstruct Quine's argument for naturalizing epistemology within his

systematic philosophy. I will focus specifically on his *holism* and its *applications*, on which he relies both in arguing against traditional epistemology, and in supporting his theses of underdetermination of physical theory and indeterminacy of translation. This is the key to understanding the scope and the normativity of Quine's epistemology. I shall point out what the *genuine* problems for Quinean naturalized epistemology are in the conclusion.

1. Quine's Argument

Quine's argument in *Epistemology Naturalized* can be divided into two parts. In the first part, he outlines what traditional epistemology is and then goes on to refute it. In the second part, he proposes his alternative approach to epistemology, adding a brief sketch of his behavioristic account of language acquisition.

Part 1: Refuting traditional epistemology

Assume, following Carnap, that studies of epistemology in general divide into two kinds: theory of meaning and theory of truth. The former asks under what conditions a sentence has cognitive meaning, and the latter asks how we can find out the truth-value of a given sentence (Carnap 1936-7, p. 420). Employing this distinction, Quine construes the programs of traditional epistemology (which concerns the foundation of science) as: (1) to explain the notion of physical objects in sensory terms, and (2) to justify our natural knowledge in sensory terms (Quine 1969, p. 71). The motivation of traditional epistemology is to clarify and ground our natural knowledge through the *certainty* of sensory experience. Quine's characterization of traditional epistemology is a kind of foundationalism. But we need to look at it in greater detail.

In *Epistemology Naturalized* and other related papers, the program of traditional epistemology is the *Cartesian foundationalist program*, which has at least two elements in the name of "Cartesian": (1) *axiomatism* about foundations, (the notion that only beliefs based on, say, the self-evident or indubitable are admissible for the foundational level); (2) *deductivism* about transmission, (the notion that only deductive inferences can transmit justification from basis to superstructure) (Audi 1993, p. 362). Quine refutes both. He examines so-called

self-evident truths in human knowledge including set theory, geometry, physics, and moral theory. He points out that none of them are immune to revision when we consider *either* their logical consequences, which may contradict themselves (e.g. Russell's paradox) *or* their truth-values from perspectives of other systems (e.g. Euclid geometry vs. non-Euclid geometry) (Quine and Ullian 1978, ch. 4).

Even if there are infallible foundational beliefs (beliefs about immediate sense experience) and truth-preserving rules of inference, such basic beliefs are incapable of supporting all of our knowledge about the external world (such as singular statements about the future, and general statements even in a weak form like "ravens are black") (Quine and Ullian 1978, ch. 6). To summarize, in Quine's view, axiomatism is untenable and deductivism is of no avail.

Quine thinks, "Carnap's *Aufbau* was the culmination of the phenomenalism that evolved through Hobbes, Locke, Berkeley, and Hume and had had its roots in Descartes's doubts and in the ancient perplexity over knowledge and error" (Quine 1995a, p. 13). Let us focus on Carnap. The *Carnapian reductionist program* has two forms; one is in *Der Logische Aufbau der Welt* (hereafter *Aufbau*), the other *Testability and Meaning* (hereafter T&M). The former is radical reductionism, the idea that "every scientific sentence should have a full translation in sense-datum language" (Quine 1991, p. 272). Carnap executes his program via "translation reduction" in *Aufbau*, attempting to translate all statements about the external world to observational terms plus logic and set theory. The trait of this rational reconstruction is *definition*, which can eliminate scientific terms in definiendum by observational terms plus logic and set theory in definiens. The latter is moderate reductionism, in that "each scientific sentence has its own separate empirical content" (Quine 1991, p. 272), which is adopted via "reduction forms" in T&M when Carnap recognized the failure of *Aufbau*, in other words the connective "is at" remains an added undefined one in "[q]uality *q* is at point-instant *x*; *y*; *z*; *t*" after translation. The reduction form is expressed as a universal sentence: $\forall x (Q_1x \rightarrow (Q_2x \rightarrow Q_3x))$. Through Carnap's definitions of *reduction sentence*, *reduction pair*, and *bilateral reduction sentence*, "x is water-soluble", for example, can be partially defined as: $\forall x (x \text{ is placed in water} \rightarrow (x \text{ is water-soluble} \leftrightarrow x \text{ dissolves}))$. In this case, "x is water-soluble" has its own empirical content, in other words the experimental condition "x is placed in water" and the possible result "x dissolves". We can see that the rational reconstruction via reduction

forms is not *equivalence* but *implication*, which cannot eliminate scientific terms.

What is the problem of moderate reductionism? Quine's answer is holism. Quine models the relation between scientific theory and sensory evidence in hypothetico-deductive schema, which can be exemplified as below: (Let $H_1, H_2, H_3, \dots, H_n$ be hypotheses, $C_1, C_2, C_3, \dots, C_m$ be initial conditions, and O be an observational consequence)

$$((H_1 \wedge H_2 \wedge H_3 \wedge \dots \wedge H_n) \wedge (C_1 \wedge C_2 \wedge C_3 \wedge \dots \wedge C_m)) \rightarrow O$$

Assume we want to test H_1 . If the antecedent is true and the observation happened, H_1 passes a test. But if the situation is the same except that the observation did not happen, then by *modus tollens*, all we can say is that there is at least one false conjunct in the antecedent, but we cannot specify which one from a logical point of view. That is to say, a single theoretical sentence cannot have its own separate empirical content, and this contradicts and thus refutes Carnap's idea in T&M.

Part 2: Introducing naturalistic epistemology

What is Quine's suggestion when the programs of traditional epistemology all fail? He thinks that what traditionalists want is a *certain* relation between theory and experience so that they can respond to the challenge of skepticism about the external world or to the argument from error (Quine 1975a, 1995a ch. 1). Although the effort of traditional epistemology is in vain, we still have another way to continue the same inquiry. The idea of Quine's proposal is by now familiar:

[1] Epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science. It studies a natural phenomenon, a physical human subject. This human subject is accorded a certain experimentally controlled input, certain patterns of irradiation in assorted frequencies for instance, and in the fullness of time the subject delivers as output a description of the three-dimensional external world and its history.

[2] The relation between the meager input and the torrential output is a relation that we are prompted to study for the same reasons that have always prompted epistemology: namely, in

order see *how evidence relates to theory*, and in what ways one's theory of nature *transcends* any available evidence. (Quine 1969, pp. 82-83. I have divide the original text into two parts and added emphasis)

Two issues are involved here. One is the program of Quine's naturalized epistemology and the other is his conception of epistemology. In his view, the subject of epistemology is seeing how evidence (meager input) relates to theory (torrential output). It is acceptable for traditional, even contemporary, epistemologists that there is a gap between the input and the output of a knowing subject, and that the investigation into input-output relation is really a kind of epistemological question. However, Quine's further formulation of the subject is different from the old. He inquires: "in what ways one's theory of nature *transcends* any available evidence", or more explicitly, "how the human subject...*posits* bodies and *projects* his physics from his data" (Quine 1969, p. 83, emphasis added). This interpretation irritates epistemologists who charge Quine with confusing the distinctions between psychology and epistemology, between the context of a discovery and context of a justification and between fact and value. I shall give a more precise account of this formulation in Section 3.

Rationale behind Quine's argument: Holism and its applications

According to Quine's holism "our statements about the external world face the tribunal of sense experience not individually but only as a corporate body," and "the unit of empirical significance is the whole of science" (1953, pp. 41-42). Later he further restricts it to a moderate form: a corporate body means clusters of sentences, if it can imply an observation categorical (Quine 1991, p. 268). Here, however, I will leave his elaboration of his holism and focus on how he applies it: refuting the linguistic/factual distinction, and deriving theses of scientific underdetermination and semantical indeterminacy.

First Quine refutes the linguistic/factual distinction. We have seen that he uses his holism to refute Carnap's reduction sentence, but now he goes deeper. In *Two Dogmas of Empiricism*, Quine tells us that these two dogmas are "at root identical" (1953, p. 41). This identical root is *the distinction* between the linguistic component and the factual component of a single statement. Generally speaking the truth of

statements depends both upon language and upon extralinguistic facts. This tempts people to suppose that the truth of a single sentence is composed of the linguistic component and the factual component. The method of knowing the truth of the factual part of a statement is to associate it with a unique range of confirmatory experiences. Based on this distinction and the verification theory of meaning, (which maintains that the meaning of a statement is its method of verification) every meaningful statement could be translated into a statement about our experience (Dogma 2: reductionism). In the extreme case we find statements whose truth depends upon the linguistic component only, and they are analytic statements (Dogma 1: analytic/synthetic).

Quine thinks that *the* linguistic/factual distinction is untenable, because scientific theory as a whole "has its double dependence upon language and experience; but this duality is not significantly traceable into the statements of science taken one by one" (1953, p. 42). Here Quine appeals to his holism again, but his refutation is beyond reductionism, but rather *the* linguistic/factual distinction.

Second, from Quine's holism comes the thesis of underdetermination of physical theory. He thinks the "holism thesis lends credence to the underdetermination theses", the view that all the possible empirical data is insufficient to determinate theory uniquely, (1975b, p. 313). In the hypothetico-deductive method, when an observations consequence is false, we have many strategies to adjust our system in order to accommodate it. For example, you can amend or abandon certain hypotheses, or you can impute the failure to certain initial conditions or *ceteris paribus* assumptions, or you can even refuse the adverse observation, if the price of taking it is too high because of dramatic changes to the whole system. Any adjusted system that is consistent with adverse observation is a new system or a new theory. Therefore, there may be two or more theories that are compatible with all empirical data. Furthermore, it is possible that these theories can be empirically equivalent and yet logically inconsistent or incompatible.

Third, Quine derives the thesis of indeterminacy of translation from his holism. He argues that there can be two or more different ways of translating one language into another, each of which is equally compatible with the totality of a speaker's speech dispositions, yet is incompatible with one another. His argument for indeterminacy of translation (the 'argument from below') is long in *Word and Object*, but there is a concise version (the 'argument from above'):

[if] we recognize with Peirce that the meaning of a sentence turns purely on what would count as evidence for its truth, and if we recognize with Duhem that theoretical sentences have their evidence not as single sentences but only as larger blocks of theory, then the indeterminacy of translation of theoretical sentences is the natural conclusion (Quine 1969, pp. 80-81).

We can make a parallel between theory-testing and radical translation as follows: in the former, all the evidence a scientist has to prove the "truth" of their theory is observational evidence, and in the latter all the evidence a linguist has to test the "correctness" of their translation manual is behavioristic evidence. If we accept epistemic holism and its consequential thesis of scientific underdetermination by data, then what happens to scientists also happens to linguists, that is, a linguist has divergent ways to construe his translation manual.

Although Quine maintains that the points of scientific underdetermination and of semantic indeterminacy are different, (the former tells us that "there are various defensible ways of conceiving the world", while the latter tells us that there is no propositions as sentence meanings) what I want to emphasize here is the connection between holism and these theses (1992, p. 102). The key role of holism and its applications will be seen in the following two sections: I will use holism and its first application to meet the objections to the scope of Quine's naturalized epistemology, and holism and its last two applications to normativity.

2. Generalizing Quine's Naturalized Epistemology

My aim in this section is to show that Quine's argument is not only suited to Carnapian reductionism as critics point out, but also to those whose meaning theory is atomic. Based on my interpretation, Quine's argument for naturalizing traditional epistemology is not as limited as critics think. This is what I mean by the word "generalizing". Let us formulate Quine's argument schematically below, where $(P_1)-(C_1)$ correspond to the part one of the argument, and $(C_1)-(C_2)$ to the part two (cf. Steup 1996, pp. 182-183):

- (P₁) Traditional epistemology aims at two tasks: (i) to justify our beliefs about the external world by deducing them from self-evident truths or infallible sense experiences and (ii) to clarify our concepts about the physical objects by translating them into sentences about sensory experiences.
- (P₂) Neither of these two tasks can be accomplished.
- (P₃) If traditional epistemology aims at these two tasks and neither of them can be accomplished, then traditional epistemology must be abandoned.
- ∴ (C₁) Traditional epistemology must be abandoned.
- (P₄) If traditional epistemology must be abandoned, epistemologists should (i) permit using empirical science in epistemology studies, which (ii) study causal relation between evidence and science.
- ∴ (C₂) Epistemologists should (i) permit the use of empirical science in epistemology studies, and (ii) study causal relation between evidence and science.

Objection 1

Obviously this argument is valid, but is it sound? Many philosophers, including Putnam, BonJour, Siegel, Van Fraassen, and Grayling, reject (P₁) explicitly or implicitly, because they think that it presupposes *falsely* that foundationalism is the whole of traditional epistemology.¹ They then proceed to argue that there are many

¹ Let me quote their comments with my arrangement below:

(1) "Quine considers the notion only in its strong 'Cartesian' setting, which is one of the things that makes his paper puzzling." (Putnam 1981, p. 244)

(2) "Construed in the reductive way in which Quine construes it, 'the conceptual side' of epistemology is a feature only of the narrowest and most implausible versions of empiricism." Thus, "the failure to achieve the aim of 'the conceptual side', to which Quine devotes most of his attention in 'Epistemology Naturalized,' does very little to show that traditional epistemology has failed and hence needs to be replaced by the suggested Quinean surrogate." (BonJour 1994, p. 286)

(3) "On Gibson's view [Quine's defender], traditional epistemology includes the assumption that knowledge is, by definition, indubitable, incorrigible, or certain. Given this characterization, virtually no working epistemologist is a traditionalist. Since virtually every working epistemologist rejects the view that knowledge entails certainty, and accepts that knowledge is fallible. On this point Gibson and Quine are

alternative epistemological programs that Quine still did not consider or examine in *Epistemology Naturalized*, therefore he has no reason from the mistake of one (or a kind) to conclude that the whole of epistemology is mistaken and therefore should be abandoned. That is to say, in these critics' view, Quine's premise (P₁) is a *hasty generalization*.

Reply

It is true that Quine did not mention other epistemological schools besides those taking Cartesian and Carnapian approaches. But let us examine two points; one regarding the argument's *form*, the other the *content* of the presupposition.

Form

When critics charge Quine with committing the fallacy, do they mean that if someone wants to naturalize epistemology, they had better examine most schools (including sub-schools of schools) inside it? If yes, then the problem confronting them must be: how many epistemological programs should be examined, so that it would be considered enough to be regarded as naturalized epistemology? This is hard to specify because there are always possible approaches missing. Therefore, the critics place Quine in a dilemma: *either* he commits the fallacy of hasty generalization *or* faces the possibilities of missing some approaches not examined. But there is a possible way out: *universal generalization*. If a given, arbitrarily selected, epistemological program has a particular property that all epistemological programs

criticizing a straw position. Gibson likewise mischaracterizes the traditional epistemologist as presupposing that 'truth is correspondence'..." Therefore, "Gibson's way of characterizing traditional epistemology, and the dispute between it and naturalized epistemology, is neither fair nor helpful in understanding or resolving that dispute." (Siegel 1995, pp. 48-49)

(4) "Quine described here a program even stricter than what I called naïve empiricism. It is at most, I think, an extremist empiricist dream, and as such only one strand in traditional epistemology....I agree with Quine that it is dead. But it is not all of epistemology." (Van Fraassen 1995, p. 82)

(5) "Let us grant the point about reductive translation. Quine next assumes that naturalized epistemology and epistemologies that turn on translation between them exhaust the options. But this is just incorrect; there are a number of non-reductive ways for the justificatory enterprise to proceed," and "It is not necessary to dilate on these options here; we have merely to be reminded of their existence to see that we are not faced with a simple disjunctive syllogism." (Grayling 2000, p. 48)

have, then the disproof of the given one, through UG, also applies to others. So, the point here is not which *variable* Quine selected, but what *property* he rejected. Traditional epistemologists want to base our knowledge of the external world upon sensory experiences. In Quine's view, if we want to carry it out *completely* (to refute skepticism *thoroughly*), then Cartesian deductivist approach to theory of truth and Carnapian reductionist approach to theory of meaning are the *well-developed* programs and *ultimate* result of the pursuit. This is the advantage for Quine to choose them to talk about his point, but it is not necessary for him to do so in choosing.

Content

The critics argue that Carnap's reductionism is the extreme, strong, and unpopular form of foundationalism; in other words, they think Carnapian epistemology cannot be a representative for traditional epistemology. However, if my interpretation of Quine's strategy is acceptable, then the objection should be withdrawn, because the point here is not epistemological program *variable*, but the *property* of all traditional epistemological programs, which can be found within Carnap's program. Curiously enough, even if critics do not appreciate Quine's strategy in *Epistemology Naturalized*, they never touch upon what Quine refutes about Carnap's program either. I have pointed out in section 1 that the *fundamental* mistake with Carnapian epistemology is not its translation reduction or reduction forms, but its *atomic* verification theory of meaning, which stems from the linguistic/factual distinction. The distinction is at stake here; it is the *property* that Quine refutes. So we can reconstruct (P₃) as: If x is an epistemological program that assumes \square explicitly or implicitly \square the linguistic/factual distinction, then x should be abandoned (according to Quine's holism). Now we can examine the objects in the domain of epistemological programs, say, $D_{EP} = \{\text{Descartes's EP, Locke's EP, Kant's EP, Chisholm's EP, Bonjour's EP, Goldman's EP...}\}$, where EP means "epistemological program", and then see how generalized Quine's argument is, if critics wish. We will see that his argument is not as limited in power as critics think. But bear in mind that the number of the epistemological programs falling under our universal sentence is of little philosophical significance. The epistemology that Quine wants to refute is not restricted to the specific epistemological

programs, but the very idea of linguistic/factual distinction underlying any theoretic construction of theories of meaning and truth.

Objection 2

Some philosophers do not accept conditional clause (P₄-i) because they think that even if traditional epistemology is abandoned, there is still no reason to connect epistemology with natural science; it remains other contemporary non-naturalistic epistemological theories. Some think that even if (P₄-i) is acceptable, they can leave relative clause (P₄-ii) aside, because there are some other normative naturalistic epistemologies, like Goldman's reliabilism.

Reply

The critics think that there are lots of alternatives apart from traditional epistemology and Quinean naturalized epistemology. Here I argue that we do not really have so many options as they think if we accept Quine's refutation of traditional epistemology.

What is the significance of Quinean naturalized epistemology? One significance is that epistemologists can use empirical theories freely in their studies. Why could they not use them before? In the beginning, the aim of traditional epistemology was to justify the legitimacy of all empirical sciences; to avoid begging the question, they could not use any empirical science. But if we accept Quine's holism, abandoning the attempt to reduce scientific statements into observation statements plus logic, then we can use natural sciences without fear of circularity. In other words, we can do epistemology with natural sciences when our epistemological program concerning scientific theories is not foundation-validation, but effectiveness-understanding based. For Quine, there is no *first philosophy*, which is the foundation of, or a supra-scientific tribunal to, the empirical sciences; what leave us inquiring into reality are observations and the hypothetico-deductive method, which are fallible and corrigible (Quine 1981, p. 72). In sum, if we adopt his holism, then we must accept its consequence, that is the naturalistic approach to epistemology. Thus the non-naturalistic options are excluded.

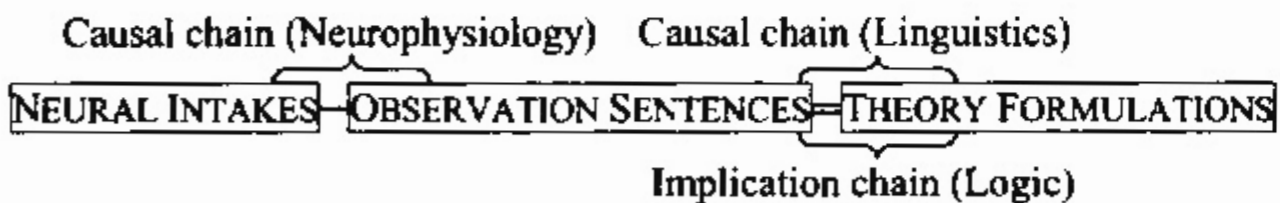
But even if we accept that there is no first philosophy, critics are curious about Quine's formulation of the new epistemological inquiry. They wonder: Why psychology? Why not something like Goldmanian naturalistic epistemology? Why not normative? This brings us to the

second topic of the paper; the normative aspect of Quine's naturalized epistemology.

In this section I have shown that Quine's argument for naturalizing epistemology can apply to any epistemological program *if* it takes *atomic semantics* or *supernaturalism* as its underlying systems (see objections 1 and 2 respectively). The programs may be listed as follows: Cartesian foundationalism, Carnapian reductionism, Frege's anti-psychologism, moderate foundationalism which advocated by, say, Roderick Chisholm, Robert Audi, and William Alston, and even Alvin Goldman's reliabilism (it seems that Goldman's analysis of knowledge adopts implicitly atomic semantics). But no matter how many programs in the list, my "generalization" task has been completed because the purpose here is to show that the range of naturalization, in the Quinean sense, is not as narrow as his critics think.

3. Normalizing Quine's Naturalized Epistemology

Quine suggests that epistemology should be replaced by psychology (especially neurology) and linguistics (especially language-learning), involving in "the chains of causation and implication that connect the bombardment of our surfaces, at one extreme, with our scientific output at the other" (1995b, p. 349), studying how human beings develop scientific theory from sensory stimulation, or in what way one's scientific theory transcends any available evidence. The subject Quine inquires into can be shown as below:



However, many philosophers, including Putnam, Goldman, and Kim, interpret Quine's suggestion as a rejection of the normative element of epistemology, confusing the distinction between context of discovery and context of justification.² In a word, they think Quine's

² I understand their interpretations as follows:

(1) "Taken at face value, Quine's position is sheer epistemological eliminationism: we should just *abandon* the notions of justification, good reason, warranted assertion, etc., and *reconstrue* the notion of 'evidence' (so that 'evidence' becomes the sensory stimulations that *cause us* to have the scientific beliefs we have)." (Putnam 1981, p. 244)

epistemology is not a *real* epistemology, because it's not a normative discipline, but a descriptive one. Nevertheless, Quine disagrees with this interpretation and claims that his epistemology is a normative one. He says: "[n]aturalization of epistemology does not jettison the normative and settle for the indiscriminate description of ongoing procedures. For me normative epistemology is [...] the technology of truth-seeking, or, in a more cautiously epistemological term, prediction" (1986, pp. 664-665). In this section, I will explain in what sense Quine's epistemology is normative.

What is the *relation* between theory and experience? For epistemologists, no matter what theory and experience are, the relation that they are concerned with is justification, which is contrary or irrelevant to discovery, i.e., the description of actual cognitive process. However, the distinction between justification and discovery is not informative enough to explain the very idea of justification relation. What is the procedure for justifying theory by experience? Here we can conceive theory as theoretical sentences, sentences occur in scientific theories or in our common sense knowledge about the physical world, and conceive experience as observational sentences. Now there are two possible cases of justifying theoretical sentences by observational sentences.

Case 1: Individual theoretical sentence vs. Observational sentences

Here we take individual sentences as the primary justificatory unit. When most people speak of justification they usually mean *strong evidence* or *verification* for a *single* belief, proposition, or what we say here, theoretic sentence. That is to say, ordinary people think intuitively that an individual sentence like "Daisy read the book in the

(2) "... on W. V. Quine's naturalistic conception, the epistemologist would study how the human subject responds to certain input; how, in the response to various stimulus patterns, the subject delivers a description of the external world and its history. ... But this approach, though perfectly tenable, *neglects the evaluative strain* pervading most of historical epistemology." (Goldman 1986, pp. 2-3, emphasis added)

(3) "... *it is normativity that Quine is asking us to repudiate*. Although Quine does not explicitly characterize traditional epistemology as 'normative' or 'prescriptive', his meaning is unmistakable. Epistemology is to be 'a chapter of psychology', a law-based predictive-explanatory theory, like any other theory within empirical science; its principal job is to see how human cognizers develop theories (their 'picture of the world') from observation ('the stimulation of their sensory receptors'). *Epistemology is to go out of the business of justification*." (Kim 1988, p. 224, emphasis added)

library", "The English football team were world champions in 1966", or "The Sun rises in the east" can be isolated and verified. In a word, they think we are able to decide the truth-value of a single sentence by empirical means.

Case 2: A set of theoretical sentences vs. Observational sentences

Here we take a set of sentences that hang together in a certain way as the primary justificatory unit. When scientists or philosophers speak of justification of a theory or of a belief-system they mean *confirmation* or *falsification*. The former means that the observational sentences can "positively support" a theory and the latter means that the adverse observational sentences can falsify (or "negatively support") a theory, or make the whole belief-system inconsistent. Furthermore, if there are two and more mutually contradictory theories, say, heliocentric system versus geocentric system, scientists think they can determine which theories are true and which false by conclusive empirical experiments.

In these two cases the very notion of justification is exemplified by verification, confirmation, and falsification. But I will not elaborate these notions any further. My purpose here is to point out a common presupposition. Namely for traditional epistemologists, a theory of justification should be a theory of efficient procedure that can, at least in principle, decide the truth-value of a single sentence and determine the correctness of a theory. I call the concept of justification that aims to satisfy this traditionalist epistemological requirement justification_T. Thus, the traditionalist epistemological inquiry can be reformulated as: the relation between theory and experience that traditionalists are concerned with is justification_T, which is contrary or irrelevant to discovery. I will show, following Quine's view, that the traditionalist epistemological requirement cannot be fulfilled, and hence the concept of justification_T is just a fantasy.

Let us consider Case 1 first. In practice we do take individual sentences as the justificatory unit in our daily lives or in philosophical discourses. (The latter can be seen in the analysis of knowledge, especially Gettier-style counter examples.) However, from Quine's holistic point of view, an individual theoretical sentence cannot be verified by experience, because the primary justificatory unit is not a single sentence, but a set of sentences. Two questions arose. Firstly, why do we intuitively think that an individual sentence can have its

own empirical meaning and then be justified singly by evidence? It is surely because we implicitly assume that the interrelated sentences, except the one being tested, are true and immune to revision, and that the tested one seems to have its own empirical meaning and can be verified singly. However, this is merely our assumption. Secondly, can an individual sentence still be the justificatory unit if we take proposition as its meaning or truth-condition? The answer is negative because, according to Quine's semantical indeterminacy, there is no such thing as "proposition". Thus, the propositional approach cannot save the epistemic atomism either. In sum, since we cannot devise an efficient procedure for a single sentence, the traditionalist epistemological requirement cannot be fulfilled. So let's turn to the second case.

What about the traditionalist epistemological requirement in Case 2? Can it be satisfied? Here the answer is no, since from Quine's thesis of underdetermination of physical theory, it is possible that there are two theories that are compatible with experiences but logically contradict each other. The so-called experiential "evidence" cannot determine theories conclusively. So again, the traditionalist epistemological requirement cannot be fulfilled.

Because the traditionalist epistemological requirement cannot be satisfied in both cases, the concept of justification_T is just a fantasy. Now, what happens if we waive the requirement and consequently reject the concept of justification_T? Must we become an epistemological anarchist — no rules, no methods, and then no normativity? No, we still have another alternative.

From the analysis above we see that there is no constraint between theory and evidence but our free creation. This is the reason why Quine uses terminologies like "posit" and "project" in formulating the subject of his epistemological program. However, the freedom in our creation is not as free as we think *if* our purpose in creation is to "get along with" the reality, that is, to explain acceptably and to predict successfully the phenomena of the physical world around us. In order to realize such a purpose we had best follow some guides in theory construction; then our freedom of theorization is curtailed. This is a pragmatic consideration. Thus, to be a *pure* holist, whose only concern is the internal relation inside the system, we can posit what we want in theory construction, even if the whole system is empirically ungrounded. But to be a pragmatic holist, who wishes to survive well in the physical world, we had best follow virtues like those Quine suggests in *The Web of Belief*: conservatism, modesty, simplicity, general-

ity, and refutability (Quine and Ullian 1978, ch. 6), which later on are integrated into two maxims – maximization of simplicity and minimization of mutilation (Quine 1992, sec. 6). These virtues and maxims are the *only* normativity in the human cognitive activities. Therefore, in Quine's words,

naturalized epistemology on its normative side is occupied with heuristics generally and with the whole strategy of rational conjecture in the framing of scientific hypotheses (1992, p. 20).

In sum, he does not think that justification is unnecessary for knowledge, but what traditional epistemologists hope for justification, viz justification_T, is impossible to carry out. The traditionalist, uncritical, and therefore unrealistic concept of normativity is rejected, and what we can do in the relation between theory and evidence is to arrange our web of beliefs as conservatively and simply as possible when confronting the empirical world.

Critics speak a lot about the need and importance of the concept of normativity in challenging Quine's epistemology, but the nature of the concept goes unspoken. He recognizes the need for the concept of normativity, and furthermore examines it from a meta-epistemological point of view, that is, considering the presupposition of the concept of justification. It is clear that through our analysis of the traditional concept of normativity, viz. justification_T, is no longer workable, but the naturalistic one is still alive and well. It assists us in arranging our "web of beliefs" whose periphery is observational sentences. An epistemology is normative in the broadest sense if it could provide epistemic norms or virtues to guide or constrain our thought. In this perspective, Quine's naturalized epistemology is indeed a normative one.

Conclusion

It is a popular misconception that Quinean naturalized epistemology is an anti-Carnapian *only*, and a non- (even anti-) normative epistemological program. I think there are two points that critics are missing. First, in terms of argument: Quine refutes the atomic verification theory of meaning which is rooted in the linguistic/factual distinction of individual sentences. Second, in terms of normativity, critics ignore Quine's holism and its consequential

theses, and then cannot understand Quine's naturalistic concept of normativity.

To defend Quine's naturalized epistemology I have reconstructed Quine's argument within his philosophical system: a system that involves the holism thesis and the theses of underdetermination of physical theory and indeterminacy of translation. All these theses and the relation between them are complex and controversial. But we need not concern ourselves with the details of these theses, nor do we need to make a judgment of their validity since this is irrelevant to the aim of this paper. If my interpretation of Quine is right then the evaluation of Quine's epistemology based on it will be fair to Quine. There is room for further investigations, such as the tenability of Quine's holism (see e.g. Fodor and Lepore 1992), the validity of Quine's arguments connecting his holism to the other theses, the soundness of Quine's theory of evidence (theory of perception) in constructing his naturalistic program (see e.g. Davidson 1974, 1990), and the success of his execution in *The Root of Reference* (Quine 1974). These are the genuine problems for Quinean naturalized epistemology.

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