

# Yuji Ijiri's Fairness Question: Perspectives from Analytic Ethics and Game Theory\*

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## Abstract

We revisit the question initially raised by Yuji Ijiri in 1975 about the notion of fairness in accounting. We argue that the fairness question was important then and remains relevant today. We borrow analytic ethics, and the generalization principle in particular, to formulate an analytical foundation for the concept of fairness in the applied accounting/auditing context. We then use the formulation and application to address challenges to the generalization principle from the game-theoretic phenomenon of signal jamming, a robust economic equilibrium widely used in many theoretic analyses of accounting manipulation practices. The key fairness question arises: is it fair to misstate financial statements when such misstatements are widely and rationally expected by the users of financial statements? We offer an analysis of how the manipulative behavior described in the signal-jamming equilibrium can or cannot be generalized ethically, and how it can help in analyzing ethical judgments in the accounting or auditing context.

Keywords: Accounting fairness, business ethics, signal jamming, generalization principle

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“The notion of fairness is one of the most essential concepts in the accounting profession. The question is ‘What is the ultimate basis by which the accountant can judge what is fair?’”

Yuji Ijiri, “The accountant: Destined to be Free”  
a speech at GSIA, Carnegie-Mellon University  
given on September 18, 1975.

## Yuji Ijiri’s Question

Among many fundamental and distinctive ideas Yuji Ijiri has proposed in accounting theory, accountability plays a cardinal role (Glover, 2018). Ijiri believed that “[A]ccountability is what distinguishes accounting from other information systems in an organization or in a society” (Ijiri, 1975, p. 32).<sup>1</sup> However, the notion of *fairness* as a key to understanding Ijiri’s notion of accountability in the accountant-accountee-accountant triangle framework (Ijiri, 1983) has been under-explored. Ijiri defined “the objective of [an] accounting system” as “to provide a fair system of information flow between the accountant and the accountee,” concluding, “Fairness is, therefore, the fundamental goal that the accounting system strives to achieve” (Ijiri, 1983, p. 80). Given that accountability is what makes accounting distinctive from a generic information science, it follows deductively that the definition of accountability, for Ijiri, shall be as follows:

- Accountability = a set of capabilities to provide a *fair* system of information flow between the accountant and the accountee.

But, then, what does it mean to provide a *fair* system of information flow? In 1983, Ijiri raised the same question:

“They [accountants] cannot hide behind the fairness under the generally accepted accounting principles or the so-called GAAP-fairness, as evidenced by the famous (or infamous, depending upon how you view it) Continental Vending Machine Company case. They must directly deal with fairness *per se*. *An impossible task?* Perhaps, although some guidelines on fairness can be developed, [...] In any event, the task of providing information useful for economic decisions is not easy, but it is child’s play compared to the agony of finding a thin line of fairness between the conflicting interests of the two parties” (Ijiri, 1983, p. 81, italics ours)

Is it really impossible to develop a non-subjective, rational, and rigorous framework of *fair* accounting? Ijiri’s question is challenging. But he himself seemed not totally pessimistic.

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<sup>1</sup>Accordingly, he believed, accounting should not be defined through a “decision-based framework,” the objective function of which is “to provide information useful for economic decisions,” and in which “[i]t does not matter what the information is about” and “[s]ubjective information is welcome as long as it is useful to the decision maker” (Ijiri, 1983, p. 75).

Since the 1970s, researchers in accounting, particularly in the U.S., have conveniently, if not intentionally, ignored the importance of Ijiri’s question despite early calls by DR Scott for including fairness as a basic accounting principle (Scott, 1941) and by Arthur Andersen Chairman Leonard Spacek for an accounting court (Spacek, 1958).<sup>2</sup> Since the emergence and subsequent dominance of the positive theory of accounting, the primary role of accounting theory has become to “provide explanations and predictions for accounting practices” (Watts and Zimmerman, 1990, p. 148); the so-called normative accounting research has declined significantly. However, in our view, conclusions from such strictly empirical studies, though important and useful for social scientific purposes, shed little light on the fundamental notion of accountability or a “fair system of information flow,” which lets accounting be accounting in the sense of Ijiri. From Ijiri’s perspective, accounting research, if it needs to be distinctive from generic information science, requires an answer to Ijiri’s question.

In this paper, we attempt an answer to Ijiri’s question. The question is *thick* in the sense that it is neither purely empirical nor entirely normative (Väyrynen, 2017), so we draw upon several disciplines, including the history of thought on accounting, legal studies, ethics, game-theory, and modal logic. This paper is two-fold. In the first half (sections 1 and 2), we further explicate Ijiri’s question and situate the question in important debates in the history of accounting thoughts and in a contemporary debate concerning the sufficiency of GAAP-fairness (DeFond and Zhang, 2014; DeFond et al., 2018; Palmrose and Kinney, 2018). In the second half (sections 3 and 4), we develop a non-subjective and logical framework of fair flow of information for accounting practices by borrowing from analytic ethics, and the generalization principle in particular, to formulate an analytical foundation for the concept of fairness in the applied accounting/auditing context. We then use the formulation and application to address challenges to the generalization principle from the game-theoretic phenomenon of signal jamming, a robust economic equilibrium widely used in many theoretic analyses of accounting manipulation practices. Within our analytic ethics framework, the key operational question on accounting fairness arises:

*Is it fair to misstate financial statements when such misstatements are widely and rationally expected by the users of financial statements?*

Using the analytic tools, we offer an analysis of how the manipulative behavior described in the signal-jamming equilibrium can or cannot be generalized ethically, and how it can help in analyzing ethical judgments in the accounting or auditing context. Finally, we discuss implications of the developed framework for research and practice.

In his 1987 paper titled “The legitimate concern with fairness”, Williams (1987) agrees with Ijiri’s position on fairness as an important accounting concept and emphasizes its meaning in terms

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<sup>2</sup>See Scott (1941) who calls for a “principle of fairness. Its character as a supplement to the principle of justice is obvious.” (p. 343). See Spacek’s famous *Accounting Review* article titled “The Need for an Accounting Court (1958),” based on his speech at the 1957 annual meeting of the American Accounting Association. He championed the cause for fairness through his other speeches, in a two-volume collection of Spacek (1969). See Friedland (2004) and 2016 for a renewed interest from current practice.

of awareness and impartiality (p. 171). Bayou et al. (2011) expands this link to ethics, stating that “[A]ccounting’s centrality to mediate relationships between institutions and institutions, and individuals and institutions, makes ethics central to accounting” (p. 114) before offering a coherent perspective on the relation of truth and ethics in accounting based on the contemporary work by American philosopher John McCumber (2005). Our paper does not evaluate the decision-usefulness as an accounting concept (the focus of Williams (1987)) nor tackles the question of truth (the focus of Bayou et al. (2011)) but instead offers a non-subjective framework for analyzing fairness and making ethical judgments in accounting practice. Sunder (2005) and Sunder (2010) emphasize the role of social norms in accounting and argued for “True and Fair as the Moral Compass of Financial Reporting.” Similar to these writings on moral philosophy on accounting including specifically on fairness such as Harris (1987), we emphasize the inadequacy of interpreting “fair” accounting as simple adherence to accounting standards but we differ by deploying analytic ethics and game-theory in our analysis as opposed to intuition- or judgement-based morality. Our interdisciplinary approach also complements Gangolly and Hussein (1996)’s critical analysis of positivism accounting thought inhibiting fairness discussion from a legal or jurisprudence perspective. Finally, our work here joins Catanach and Rhoades-Catanach (2010), Fleischman et al. (2010), Mintz (2010), Stuebs (2010), and Williams (2010), among other the works by ethics scholars in accounting in bringing this urgent and critical issue to the attention of contemporary researchers.

## 1 Background of Fairness: Accounting and Legal Perspectives

### 1.1 The “comma crisis”: a positivism versus constitutionalism debate

Accounting historian Stephen A. Zeff (2007) uses the term “comma crisis” to describe the history of the audit practice regarding fairness of financial statements. Specifically, the crisis is about whether or not to keep a comma between “Present fairly” and “in conformity with G.A.A.P” (Zeff, 2007) in the audit’s report. In 1934, the American Institute of Accountants (AIA)’s special committee for the modern form of the auditor’s report first used the expression “fairly present, in accordance with accepted principles of accounting.” The committee meant that auditors should offer, if necessary, separate opinions on “fairly present” and “in accordance with G.A.A.P” (ibid). Since then, the comma has appeared, disappeared, and reappeared in various important reports. In most cases, there was no clear awareness about the importance of keeping or removing it (ibid.).

However, whether to keep the comma or not is a substantive choice. To remove the comma means that “Present fairly” is semantically equivalent to “in conformity with G.A.A.P.” Its practical implication is that auditors must offer only one opinion and that opinion must be limited to whether a firm’s financial statements are in technical accordance with officially documented, generally accepted accounting practices. Accordingly, those who defend the equivalence assert that fair accounting is nothing but a set of conventionally accepted *rules*. Let us call this idea “Accounting

positivism.” Accounting positivists would urge that they have solved Ijiri’s question by redirecting it (to rules and conventions).

In contrast, to keep a comma means that ”Present fairly” may be sometimes, but not always, distinctive from “in conformity with G.A.A.P.” The non-equivalence entails that auditors can and should offer, if necessary, two separate opinions. For instance, an auditor has a duty to express that a financial statement takes advantage of loopholes in the GAAP, although the statement is technically in accordance with the rules. Those who take this view would defend the idea that a particular rule or practice’s wide acceptance by practitioners does not necessarily mean that the rule is complete or sufficiently fair, so there must be, additionally, meta-standards or *principles* that govern rules. Let us call this position “Accounting constitutionalism.”

We are aware of the so-called “principle-based” versus “rule-based” debate in accounting standard setting. Here, our idea of positivism versus constitutionalism overlaps the distinction, but is distinctive. In the existing debate, rules typically refer to technically and clearly codified/written statements, whereas principles do not. In particular, in the debate, principles sometimes refer to accountants’ judgments or moral intuitions. In this paper, we attempt to show that fundamental principles of fairness in accounting can and should be codified in an objective manner. We, hence, argue that relying upon individual accountants’ judgments rather than objectively defined principles is at best incomplete, at worst dangerous, and not a satisfactory answer to Ijiri’s question.

## 1.2 Ijiri’s Constitutionalism

By placing fairness at the core of accounting theory and with ambition to define accounting fairness, Ijiri was an accounting constitutionalist. He had reasons for his stance, which we endorse. First of all, Ijiri knew that it was very possible to certify misleading or fraudulent financial statements even as they technically complied with GAAP. Ijiri cited the case of *United States v. Simon* (1969).<sup>3</sup> Carl Simon was a senior partner of Lybrand, Ross Bros. & Montgomery. Simon and two other auditors reviewed the Continental Vending Machine Corporation’s financial statements. Continental loaned \$3,500,00 to the Valley Commercial Corporation, which was unable to repay Continental. Auditors were aware of the facts but did not mention them, because, according to a standard interpretation, Continental’s book technically complied with the generally accepted accounting practices at that moment. However, as a result, investors (e.g., stockholders and debt-holders) who relied on the auditors’ certification were significantly misled about the financial health of the companies. *United States v. Simon* is not the only abnormality. Several other cases show the insufficiency of GAAP (e.g., Enron, see DeFond et al. (2018)).

Cases like *U.S. v. Simon* are structurally parallel to “hard cases” in law (Dworkin, 1978). Hard cases are those in which lawyers must ask whether or not it is fair to rely on only the black letter

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<sup>3</sup>*United States V. Simon*, 425 F.2d 796 (2d Cir. 1969), the Supreme Court denied *certiorari* in this case, indicating that there had been sufficient evidence produced at the trial to warrant submission to the jury.

of the law, even if the particular conduct they are evaluating technically complies with existing statutes and/or precedents. Among numerous cases, a textbook example is the case of *Riggs v. Palmer* (1889).<sup>4</sup> Likewise, the fact that GAAP is widely accepted does not preclude that it is incomplete. It is technically possible to take advantage of the loopholes in GAAP.

Beyond the obvious desirability of fairness illustrated in the Simon case and the Riggs-Palmer case, the earlier quote shows that Ijiri also understands—correctly, in our view—that although the concept of fairness is an unquestionable *axiom* of accounting, it does not mean that developing the concept is easy or that auditors can always have a complete and clear understanding of the concept of fair information. For the sake of argument, suppose that there are competing conceptions of fair information and we do not yet know which one is the most compelling. Still, it is undeniable that accounting, axiomatically, depends upon *some* concept of fairness, although one could question a particular conception of fair accounting. Without the concept of fair information, accounting loses its ontological distinctiveness and becomes part of generic information science. So, as Ijiri thought, it is indisputable that the concept of fairness is an inherent part of the practice of accounting *per se*. Further, it is possible to develop a reasonably non-subjective and logical framework of fair accounting, which we will do later.

## 2 Ijiri’s Question Matters Today

### 2.1 The current debate on the ethics of audit quality

Critics might argue that while Ijiri’s question *was* a relevant issue when the modern founders of the accounting field debated general goals of accounting research and practice, such as the Trueblood committee’s project on objectives of financial reporting (see articles from the 1972 special volume of *Journal of Accounting Research*), it is no longer a timely topic. Critics might also think that we would do better to flush away the notion of fairness in accounting altogether and instead solely pursue economic objectives without any pseudo-philosophical or value-laden baggage. This is a tempting suggestion to accounting researchers. But one can argue ignoring Ijiri’s question is itself a value-laden choice that defends positivism and is thus self-contradictory. The debate

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<sup>4</sup>In that case, a grandson murdered his grandfather so he would inherit the wealth promised in the grandfather’s will, which named the grandson as an heir. No statute or case law at that time indicated that those who took advantage of their own crime were liable to forfeit inherited wealth. Technically, then, on one hand, the grandson needed to be criminally punished for the murder; on the other hand, the will had to be validly executed. So the court wrote, “It is quite true that statutes regulating the making, proof and effect of wills, and the devolution of property, if literally construed, and if their force and effect can in no way and under no circumstances be controlled or modified, give this property to this murderer” (from Dworkin, 1978, p. 23). However, the court also noted that “...all laws as well as all contracts may be controlled in their operation and effect by general, fundamental maxims of the common law. No one shall be permitted ... to take advantage of his own wrong...”(ibid.). The fundamental maxim or principle, “No one shall be permitted to take advantage of one’s own wrong” was not any part of the black letter of statutes/precedents; thus, the murderer tried to take advantage of legal loopholes. But he failed, because the court recognized that the relevant rules were *incomplete*, so it needed to use the maxims of the laws. Existing statutes and cases are generally accepted legal rules/practices, but they are incomplete.

between positivism and constitutionalism still exists in contemporary accounting *research* as well as in practice, and without answering Ijiri’s question, positively or negatively, the research debate cannot make progress.

In 2014, the *Journal of Accounting and Economics*, a major accounting journal, published Mark DeFond and Jieying Zhang’s (2014, hereafter, DZ) review paper about auditing research. DZ make two claims, one empirical, the other normative. The empirical claim is that most studies in auditing research view auditing as “a binary process, with the auditor’s role reduced to the simple detection and reporting of ‘black and white’ G.A.A.P. violations” (ibid., p. 280). The normative claim is that the dominant view that reduces audit quality to mere compliance with GAAP. is *inappropriate and bad*. Instead, DZ propose what they call “higher audit quality,” defined as “greater assurance that the financial statements faithfully reflect the firm’s underlying economics, conditioned on its financial reporting system and innate characteristics.” (ibid., p. 281). Here are the basic arguments by DZ 2019.

- Authority of major auditing standards: DZ interpret that in the major standards, auditors’ responsibilities extend beyond the simple detection of GAAP breaches.
- Authority of the courts: “US Supreme Court ... holds auditors legally liable for misleading financial statements even when those statements are in strict compliance with GAAP (Ball, 2009)” (ibid., p. 281).
- Intuitive absurdity of counter-examples: For example, DZ use U.S. vs. Simon and Enron, which took advantage of loopholes in GAAP.

In our view, DZ’s criticisms and their ensuing debate with other prominent accounting researchers on the existing GAAP-oriented audit quality illustrate the contemporary relevance of the accounting positivism-constitutionalism debate and highlight the necessity for the accounting profession to confront the fundamental fairness question raised by Ijiri.

## 2.2 Road to non-objective framework of fair accounting

We now briefly review the three grounds underlying the DZ 2014 arguments and propose a way forward toward a non-subjective and logical framework of accounting fairness.

Regarding the first argument (Major auditing standards) DZ’s appeal for major auditing standards may not be strong enough, for two reasons. First, DZ’s interpretation is controversial. In 2018, Zoe-Vonna Palmrose and William R. Kinney, Jr (2018, hereafter, PK) criticized DZ. In the paper, PK survey major accounting and audit authorities’ standards such as the Securities and Exchange Commission (SEC), Financial Accounting Standards Board (FASB), and Public Company Accounting Oversight Board (PCAOB). PK conclude that, in their interpretation, “U.S. standards, regulations, and practice do not extend the auditor’s role to assuring a firm’s financial reporting

quality beyond GAAP compliance, such as separately assuring ‘faithful representation on the firm’s underlying economics.’ (ibid., p. 14). PK add, “Our results suggest that DZ (2014) expresses a personal view of a hypothetical and normative definition of audit quality that is not supported by existing U.S. authoritative guidance.” (p. 14). DZ with another author, Clive Lennox (2018, hereafter, DLZ), responded to PK, by explaining why PK’s interpretations of major regulations and standards are wrong.

It is not in our interest to adjudicate whose interpretations are valid, because the interpretive debate cannot fully answer Ijiri’s question. Relying upon existing standards is partly a positivist/conventionalist approach. A major rationale for respecting existing standards is that they are contracts/promises made by all participants through legitimate representation. However, contracts/promises are not sufficient moral or legal grounds. Two mafioso can make spectacularly unethical or illegal promises/contracts with each other. Neither morality nor the courts demand or enforce unconscionable promises/contracts (Shiffrin, 2006). We need a more fundamental ground.

Regarding the second argument (court rulings), DZ and DLZ point out that court rulings, which they seem to view as a higher authority than major standards, are consistent with their interpretations of audit standards. But court cases or statutes are often incomplete, and it is another question whether audit standards or practices must be always overridden by laws or, alternatively, whether laws must be reformed in accordance with existing audit standards and practices.

Lastly, the third argument by DZ and DLZ relies on the absurdity of a counter-example such as Continental Vending and Enron by simply appealing to moral intuition.<sup>5</sup> Although we are sympathetic to DZ and DLZ’s judgment about the absurdity of the example, we agree with PK concerning DZ’s emphasis on the role of intuition, which can be problematic. Specifically, DLZ write,

“... PK’s compliance view is anathema to the exercises of thoughtful judgment. If one adopts PK’s binary view that accounting choices are either GAAP compliant or non-compliant, there would be little need for professional judgment. PK appear to be suggesting that we should train our students to adopt a compliance mindset when they prepare for a career in public accounting. In contrast, we believe that we should teach our students that standards require significant judgment and decision-making skills in order to ensure that financial statements are fairly presented” (DeFond et al., 2018, p. 2).

In our view, intuition may be an important part of ethical reasoning but is not itself an argument.

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<sup>5</sup>Appealing to counter-examples is a form of *reductio ad absurdum*, as follows: 1) Financial statements should be certified as fair information if they comply with GAAP. 2) Financial statements in the cases of Enron and Continental Vending complied with GAAP. 3) Therefore, financial statements in the cases of Enron and Continental Vending should have been certified as fair information. 4) 3) is absurd. 5) If the conclusion is absurd, at least one of the premises must be the origin of absurdity. 6) 2) is fact. 7) Therefore, 1) must be the origin of absurdity. The formal logic of this argument is valid. But the soundness of 4) is at stake. 4) is a moral intuition, a considered judgment, or an emotive reaction.



Experimental philosophers have shown that moral intuitions are not as consistent as we think (e.g., moral intuitions are susceptible to morally irrelevant situational cues (Alexander, 2012)). But we understand that, by judgment, DZ and DLZ mean more than intuition. It is plausible to conjecture that their judgment was based on some logical conception of fairness. In what follows, we attempt to defend accounting fairness in a principled manner by developing a rigorous and rational conception of accounting fairness, which is itself answering Ijiri’s question. If it is possible to develop a non-subjective framework of fair accounting, and if we have such a principled framework, we can explain and defend, under the principle, why the financial statements of Enron or Continental Vending were not fairly represented.

### 3 Fairness as Generalization of Action Plans

Ijiri’s question can be answered in a reasonably precise fashion within the tradition of deontological ethics (Donagan, 1984; Korsgaard, 1996; O’Neill, 2014). We follow the development of Hooker and Kim (2018), who use quantified modal logic to formulate fundamental ethical principles. Most relevant to the question of fairness in accounting is the Generalization/Universalization Principle,<sup>6</sup> which can help judge the acceptability of misleading or incomplete accounting statements. However, it is only one necessary condition for ethical conduct, which is also regulated by considerations of utility creation and respect for autonomy. This means that our discussion here is focused on fairness, but fair accounting is not necessarily good enough to be fully ethical.

#### 3.1 Action plans and rationality

Deontological ethics, at least in the Kantian tradition, begins with the idea that unethical behavior is unethical because it is irrational in a certain sense; specifically, the rationale for the behavior contains a logical inconsistency (Kant, 1785).

An action can be conceived as having an “if–then” form: if certain conditions are satisfied, then perform a certain action. The conditions set out the rationale or set of reasons for the action. A conditional policy of this sort can be called an *action plan*. The agent must regard the reasons that comprise the antecedent (if–part) to be jointly sufficient to justify taking the action in the consequent (then–part).

Suppose for example that I decide to lie. Perhaps it is simply convenient to deceive others on the present occasion, in which case my action plan is, “If it is convenient to deceive others, then lie.” My reason for lying, in the relevant sense, is not a psychological cause or motivation, but a state of affairs that I take as justifying the lie.

We will express action plans using the notation  $C \Rightarrow A$ , where  $C$  is a condition and  $A$  an action. The symbol  $\Rightarrow$  means that the agent takes condition  $C$  to be necessary and sufficient to perform

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<sup>6</sup>The Generalization Principle is also called the Universalization Principle.

action  $A$  when the condition is met.

We can revisit the case of Continental Vending Machine. Suppose that I am the auditor/accountant. My client, Continental, asks me to do something that is in accordance with GAAP. but that seems questionable (for instance, certifying financial statements even when the company has lent money to a company that is not able to repay.) Continental is a significant client for my employer, and satisfying the client brings me financial gains, so I am eager to comply. I also don't think doing so will cause any problems for me.

My action plan above is a conditional proposition statement:

$$C_1 \wedge C_2 \Rightarrow A_1$$

where the antecedents  $C_1, C_2$  and consequent  $A_1$  stand for:are interpreted

$C_1$  = "I want to satisfy my employer and promote my self-interests (e.g., not to be fired)"

$C_2$  = "I can do this by overstating the financial health of the client company and this won't be a big problem for me."

$A_1$  = "I will certify the questionable statements."

[The symbol  $\Rightarrow$  means that I, the auditor, take the two conditions  $C_1, C_2$  to be jointly sufficient and individually necessary reasons to perform the action  $A_1$  when the conditions are met.]

### 3.2 Universality of reason

The next premise needed to draw the generalization condition is "the universality of reason": rationality does not depend on who one is, only on one's reasons. Thus, if an agent takes a set of reasons as justifying an action, then to be consistent, the agent must take these reasons as justifying the same action for any agent to whom the reasons apply. The agent must therefore be rational in believing that his/her reasons are consistent with the assumption that all agents to whom the reasons apply take the same action.

If I decide to lie for reasons of convenience, consistency requires that everyone is justified in lying whenever deception is convenient. In other words, each choice of action for me is a choice for all agents. If everyone lied when deception was convenient, no one would believe the lies, and no one would be deceived. Therefore, my action plan is un-generalizable. Thus, my action plan—to lie for the sake of convenience—does not satisfy the demand of consistency/no-contradiction/fairness.

### 3.3 Generalization

This leads to the famous *generalization/universalization principle*, perhaps most clearly expressed as follows:

“I must be rational in believing that the reasons for my action are consistent with the assumption that everyone with the same reasons takes the same action. An action plan that satisfies this principle is *generalizable*.” (Hooker and Kim, 2018)

Now we can return to the case of Continental—a practice that we suppose is enacted by agent  $a$  and represented by the action plan  $C_1(a) \wedge C_2(a) \Rightarrow A(a)$ . One reason for the action is  $C_2(a)$ : agent  $a$  can promote his self-interest (e.g., to make more money). However, perhaps many other auditors would like to—and could—follow the practice in a similar context. Rationality, though, constrains agent  $a$  to believe that if every auditor adopts this action plan, reason  $C_2(a)$  will no longer apply because overstatements will no longer have credibility. Thus if every auditor in a relevantly similar context follows the same practice, agent  $a$  will no longer be able to take advantage of the practice. This means the practice is ungeneralizable and does not satisfy the demand of consistency.

We can write this more formally by borrowing the operators  $\Box$  and  $\Diamond$  from modal logic. We define  $\Box S$  to mean that the agent is rationally constrained to believe proposition  $S$ ; in other words, it is irrational for the agent to deny  $S$ . We define  $\Diamond S$  to mean  $\neg\Box\neg S$ , or the agent is not rationally constrained to deny  $S$ ; that is, it is not irrational to believe  $S$ .

To formulate generalizability, we adopt the notation  $P(S)$  to mean that it is physically (and therefore logically) possible for proposition  $S$  to be true. The action plan  $C_1(a) \wedge C_2(a) \Rightarrow A_1(a)$  is generalizable only if  $a$  can rationally believe that it is possible for  $a$  to carry out the questionable audit practice if every auditor adopts this plan:

$$\Diamond P\left(C_1(a) \wedge C_2(a) \wedge A_1(a) \wedge \forall x(C_1(x) \wedge C_2(x) \Rightarrow A_1(x))\right)$$

Because  $a$  cannot rationally believe this, the action plan is ungeneralizable.

To state the generalization principle for an arbitrary action plan, let  $\mathcal{C}(a)$  be a conjunction of conditions that are individually necessary and jointly sufficient for  $a$  to carry out action  $A(a)$ . Then

Action plan  $\mathcal{C}(a) \Rightarrow A(a)$  is generalizable if and only if

$$\Diamond P\left(\mathcal{C}(a) \wedge A(a) \wedge \forall x(\mathcal{C}(x) \Rightarrow A(x))\right)$$

## 4 Signal Jamming and Fair Accounting

When applying the generalization principle to our discussion of fairness in our specific accounting context, we encounter modern game theory. Specifically, a modern game-theoretic economic model of signal-jamming illustrates and situates the generalization principle within the applied accounting framework very well. In short, the signal-jamming model shows that even though an individual economic choice, which may be characterized as an ethically questionable behavior, is not effective

in a market with rational expectations, all individuals in the economy still choose to take on the questionable choice in equilibrium, thus making the behavior generalizable from an ethics perspective. In this section, we connect the game theory of signal jamming to an ethical analysis.

The basic economic intuition of signal-jamming is based on the rational expectation idea underlying a market equilibrium where the response from the market (such as prices or other payoffs) fully reflects the individual incentives to engage in questionable behavior. For example, the stock market would discount a firm's claim of high performance in pricing its stock due to obvious incentive to inflate the claim. The surprise result is that, under rational expectation, it is still rational for the individual firm to engage in such questionable behavior (such as inflating performance). Later in this section, we sketch an economic model of such behavior in the context of familiar ethics settings (such as resume-padding). See the Appendix for a full treatment (including a proof) of the economic model.

Using the language in the specific accounting setting, the basic thought experiment is that if every auditor certifies questionable financial statements, investors will accordingly discredit the certificate to the extent that auditors mislead investors. Thus, investors will not be affected by auditors' deception. Furthermore, in that situation, an auditor who does not perform the questionable practice will put her client, a corporation, into a disadvantaged position. Accordingly, the only "generalizable action plan" is that every auditor adopt the questionable practice. This thought experiment assumes that investors will accordingly discredit deceptive auditors. But it is an empirical matter whether investors are already aware of the fact that even GAAP certification may be misleading. In fact, investors in Continental Vending Machine, for instance, were misled, meaning that it is uncertain whether the specific model outcome of fully anticipated bias prevails in the real market. Generally, it is unclear whether all investors are reasonably expected to be aware of specific detailed opportunities and constraints which allows the biases to be introduced into the report. This intuition is not unlike other common settings about deception. Consider deception about reservation prices in car negotiations. The buyer and the seller are expected to be deceived about the bottom prices to some extent, so that they are accordingly expected to discredit offers to some extent (Fried, 1978; Strudler, 1995, 2005).

While the idea underlying the signal jamming model is intuitive and compelling, the economic analysis of signal jamming has a different purpose than ethical analysis: it predicts or explains the practice, whereas ethics judges the practice. Yet, an economic analysis can be useful by helping to *identify* types of jamming that can be ethically defended. In this section, we first adapt a familiar setting of resume-padding into its equivalent signal-jamming form. Then we use the model to offer an analysis of how the manipulation behavior described in the signal-jamming equilibrium can or cannot be generalized and how it can help in analyzing the ethical judgments.

## 4.1 Ethics of exaggeration

Exaggeration is an old issue in ethics, often discussed in the context of advertising speech. Claiming to sell “The World’s Best Pizza,” for example, is ethically permissible because everyone knows it is hyperbole. The ethical test is whether an advertising claim actually deceives anyone, where deception is understood as causing someone to believe something one knows is false. Deception merely for financial gain is normally unethical because it is not generalizable. If deception for this purpose were universally practiced, no one would be deceived, and the (attempted) deception would not serve its purpose.

Although the pizza ad is nondeceptive and ethically permissible, other cases are less clear. To get some perspective, let’s take the example of resume padding. The usual defense for resume padding is that everybody does it; therefore, employers expect it and are not deceived. In fact, a failure to pad the resume could be deceptive, because it could lead employers to believe mistakenly that the applicant is less qualified than the resume states.

This doesn’t show that *any kind of padding* is permissible, because one of the purposes of writing a padded resume is to communicate something about the applicant to the employer. If people wrote anything they pleased on their resume, the resume would be just a fantasy piece and would communicate nothing (other than the applicant’s writing skills). So to evaluate padding ethically, one must state a *specific padding policy* and check if it is generalizable. But this is not what people do. They only claim that “some padding” is OK and trade on this ambiguity.

This is where economic analysis comes in. Its connection with ethical analysis is this: equilibrium in economics is something like generalization in ethics. If a certain degree or type of signal jamming occurs in an equilibrium solution, then it is generalized in this solution. So if the rationale for this degree of jamming (i.e., *this specific policy*) is consistent with what happens in equilibrium, the jamming is arguably generalizable.

## 4.2 Economic Model

The job applicant wishes to maximize his/her utility, a problem we may formulate as

$$\max_b \theta E(x|y) + (1 - \theta)E(x) - C(b)$$

where  $b$  is the amount of padding,  $x$  is the true value of the applicant to an employer, and  $y$  is the value stated on the resume.  $E(x|y)$  is what the employer expects from the employee, given the value  $y$  stated on the resume. We might interpret  $E(x)$  as what the employer expects on the basis of other sources, such as recommendation letters, interviews, etc. The multiplier  $\theta$  is an estimate of how much the employer’s overall assessment depends on the resume, where  $0 \leq \theta \leq 1$ .  $C(b)$  is the expected cost to the employee of an amount  $b$  of padding, perhaps due to misfit with the job or loss of credibility.

The crucial step is to suppose that in equilibrium, employers know that a certain amount  $\hat{b}$  of padding occurs. Or we might interpret  $\hat{b}$  as the amount of padding that employers expect on average (more on this later). This means that

$$E(x|y) = y - \hat{b}$$

The optimization problem now becomes

$$\max_b \theta(E(x) + b - \hat{b}) + (1 - \theta)E(x) - C(b)$$

Since  $\hat{b}$  is a constant, this implies that the optimal value  $b^*$  of  $b$  satisfies

$$C'(b^*) = \theta$$

Thus, the applicant is incentivized to pad the resume until the marginal cost of padding is  $\theta$ ; that is, until adding one unit of value by padding is offset by a cost of  $\theta$ . If the employer relies solely on the resume, then  $\theta = 1$ , and the applicant adds padding until a point of vanishing returns; that is, until the value of any additional padding incurs an equal expected cost. Typically,  $C'(b) > 0$  when  $b > 0$ , which means that padding exists in equilibrium. Finally, since employers presumably know how much padding occurs in equilibrium,  $b^* = \hat{b}$ .

### 4.3 Ethical Assessment

The mere fact that resume padding occurs in equilibrium does not show it is generalizable or fair. The generalization test asks whether a generalized policy is consistent with the *rationale* for the policy. We must therefore check whether the rationale for a padding amount of  $b^*$  is consistent with the equilibrium solution in which  $b = b^*$ .

If padding by amount  $b^*$  is not already common practice, the equilibrium argument clearly does not show it is ethical, even though it occurs in equilibrium. In such an environment, the reasons for padding are something like (a) people don't generally pad resumes and (b) I can get ahead of other equally qualified people by padding my resume. Both (a) and (b) are inconsistent with an equilibrium in which people pad by  $b^*$ .

If padding by amount  $b^*$  is already common practice, it is ethical if the reasons are (c) people typically pad their resumes by at least  $b^*$  and (d) I can get fair treatment only if I pad my resume by  $b^*$ . In the equilibrium solution, people *always* pad their resumes by  $b^*$ , and presumably people can get fair treatment only if they follow this policy. This shows that padding by  $b^*$  for reasons (c) and (d) is generalizable. Furthermore, if someone wants to pad a resume by *more* than  $b^*$  for reasons (c) and (d), the equilibrium solution does *not* show that this is generalizable. So, we learn something from the equilibrium solution.

Questions that tend to arise in practice, however, are not so clear cut. Suppose someone wants to pad by amount  $b^*$  because (e) people often pad their resumes, and (f) I can get fair treatment only if I pad my resume by amount  $b^*$ . Reasons (e) and (f) make no sense as a rationale. Reasons don't have to be good or convincing reasons, but they have to be reasons. The fact that people often pad their resumes is no reason to pad a resume by  $b^*$ . At best, it is a reason to pad a resume by about the same amount as others do.

A similar principle would apply to accounting statements. We can ask whether a policy of overstating financial health by a certain amount, in ways that are consistent with GAAP, is generalizable. When certifying a questionable financial statement, there can be three different kinds of situations, corresponding to the three types above in the case of resume padding, as follows:

- (a') Auditors do not generally overstate financial health, and (b') a certain auditor can get ahead of other auditors by overstating financial health. Overstating under this rationale is not generalizable.
- (c') Auditors generally overstate financial health by at least  $b^*$  in GAAP-compliant ways, and (d') a certain auditor can obtain fair treatment only if she overstates financial health by  $b^*$  in GAAP-compliant ways. This type of overstating is generalizable, but it is unlikely that one can establish that (c') is true.
- (e') Auditors generally overstate financial health, and (f') a certain auditor can get fair treatment only if she overstates by  $b^*$ . This is not a coherent rationale for overstating by  $b^*$  and therefore does not justify doing so.

#### 4.4 A Combinatorial Model

We have seen that overstating financial health by an equilibrium amount  $b^*$  is generalizable only under specific conditions that are unlikely to obtain. However, it may be easier to find a generalizable signal-jamming policy if financial health is overstated in *certain ways* rather than by *a certain amount*. This requires a more sophisticated economic model that introduces combinatorial optimization.

We again explore the idea in the context of resume padding. Suppose a padding policy calls for using certain kinds of padding, rather than a certain amount of padding—such as marginally overstating one's managerial responsibilities at past jobs, or making statements that are plausible but that employers cannot check. For example, I might marginally overstate my responsibilities in past jobs because others are doing it, and I can get fair treatment only if I do it. This *may be* generalizable.

An economic analysis can perhaps help identify the *kinds* of resume padding that might occur in equilibrium and therefore could be generalizable. To do this, we replace the amount  $b$  of padding with a bundle  $B$  of padding types. Now  $E(x|B)$  is the employer's assessment of the applicant given

that the padding types in  $B$  are used in the resume, and  $C(B)$  is the expected cost to the applicant. The applicant's optimization problem is

$$\max_B \theta(E[x|y(B)]) + (1 - \theta)Ex - C(B)$$

Now we must say

$$E[x|y(B)] = y - L(\hat{B})$$

where  $\hat{B}$  is the set of padding practices that employers expect and  $L(\hat{B})$  is how much they discount the worth of the applicant due to these practices. The optimization problem becomes

$$\max_B \theta(E[x] + L(B) - L(\hat{B})) + (1 - \theta)E(x) - C(B)$$

This is a combinatorial problem in which  $B$  ranges over possible sets. If  $B^*$  is the optimal solution, then we might conjecture that employers know what applicants are doing in equilibrium, so that  $\hat{B} = B^*$ . If applicants are, in fact, using the padding techniques in  $B^*$ , then the rationale for doing so (to obtain fair treatment) could be generalizable.

We again consider the three scenarios outlined earlier in an auditing context.

- (a'') Auditors do not generally overstate financial health, and (b'') a certain auditor can get ahead of other auditors by overstating financial health in certain ways. Overstating under this rationale is not generalizable.
- (c'') Auditors generally overstate financial health in GAAP-compliant ways belonging to a certain collection  $B^*$ , and (d'') a given auditor can obtain fair treatment only if she overstates financial health in these same ways. This type of overstating is generalizable, and since it may be widely known which kinds of overstatement are generally used, condition (c'') could be satisfied in practice.
- (e'') Auditors generally overstate financial health, and (f'') a certain auditor can get fair treatment only by overstating in ways belonging to a certain collection  $B^*$ . This is not a coherent rationale for overstating in the ways in  $B^*$  and therefore does not justify doing so.

Thus if signal jamming has reached an equilibrium in which certain *types* of GAAP-compliant overstating is used, and it is generally known which types of overstating is used in the equilibrium, then an auditor may be ethical in overstating financial health *in these particular ways*. This is still a big "if" that is perhaps rarely satisfied. Economic analysis is therefore unlikely to justify most overly optimistic reporting practices that are used in practice, even when they are GAAP-compliant.



## 5 Discussion and Conclusion

Let us return to the current debate between DZ & DLZ and PK. DZ and DLZ's contention was that *U.S. vs. Simon* and Enron were GAAP-compliant but it's absurd to say that they were cases of fair accounting. PK's response was that making a statement beyond the scope of GAAP leads auditors to use personal and subjective judgement and it is safer for auditors to strictly follow the existing written rules of GAAP. Above, we construed that, by judgment, DZ and DLZ meant more than subjective intuition. To show that, we have attempted to develop a logical and objective rule of accounting fairness. We have shown that it is possible to develop a non-subjective *rule* of fair accounting beyond GAAP. Now using the principled framework, we can explain and defend, under the rule, why the financial statements of Enron or Continental Vending were not fairly represented. Those were cases of (a\*)(b\*) or at best, (e\*)(\*f), where certifying questionable financial statements or overstating financial health are not generalizable. Using the framework and tools developed here, we are now able to rationally explain and defend DZ and DLZ's judgment.

We believe that now more than ever the accounting community, including educators, practitioners, and policy makers, shall confront the ethical dimensions of accounting work. In other words, we must answer Professor Ijiri's question. In this paper, we demonstrate that modern tools such as analytic ethics and game theory are compatible with addressing these issues and, in the process, offer new perspectives in the fairness debate.

## Appendix: The Economic Equilibrium of Signal Jamming

In this appendix, we sketch a simple economic model of "signal-jamming" to link the economic equilibrium behavior to the moral standards of generalization.

Our economic model is a variant of the original model of Stein (1989) and Holmström (1999). We briefly sketch the economic model here. Suppose the choice before an accountant (or auditor) is to agree with (or to certify) a client's report that contains a bias. To be concrete, we represent this choice by choice variable  $b \in R$  where the report is represented by outcome variable  $y = x + b$  where  $x \sim N(x_0, \sigma_x^2)$  is interpreted as the real economic outcome. In this context, a choice of  $b = 0$  represents a "truthful" report with respect to  $x$ , while any non-zero bias  $b \neq 0$  represents a report not truthful. Suppose the accountant/auditor works for a client whose preference is to increase the market's perception of variable  $x$  based on the report  $y$  in addition to the true economic outcome  $x$ . Assume that the accountant/auditor chooses the bias  $b$  on behalf of the client, the economic choice becomes choosing a  $b$  to maximize a weighted average of the perceived and actual economic outcome minus the cost of the bias, or,

$$\max_b \theta E [E^M[x|y]] + (1 - \theta)E[x] - C(b)$$

where  $\theta$  is relative weight placed on the market expectation,  $E^M[x|y]$  denotes the market's expectation of  $x$  given realized  $y$  (different from client's expectation  $E[.]$ ), and  $C(b)$  denotes the expected economic loss to the clients due biased report (such as litigation and rearranging economic activities to support or justify the biased report). Relating to the action plan given earlier, the economic model so far represents the choice problem:  $C_1$  is captured by the auditor sharing the employer's preference and  $C_2$  is captured by the maximization problem. That is, as long as the solution the maximization problem above, denoted  $b^*$ , is chosen by the accountant/auditor (i.e.,  $A_1 = \{b = b^*\}$ ), the economic model is equivalent to  $\{C_1 \wedge C_2 \Rightarrow A_1\}$

Now we lay out the economic consequence of this economic choice in a market equilibrium where such a choice is anticipated by the market participants. Following the rational expectation invoked in modern game-theoretic economic models, we endow the market full economic rationality by imposing the following two conditions. First,  $E^M[x|y]$  is based on a market's conjecture of the reporting choice of the client:  $E^M[x|y] = E^M[x|y = x + \hat{b}]$  and second, the conjecture is correct in equilibrium, that is  $\hat{b} = b^*$ . Assuming  $C(b) = \frac{kb^2}{2}$ , the only rational choice in equilibrium is

$$b^* = \hat{b} = \frac{\theta}{k}$$

The surprise result is that the equilibrium choice is  $b \neq 0$  even if it is completely expected and ineffective. Here is a quick proof sketch. First, let's solve the  $E^M[x|y]$  part of the objective function. Since this is the market's expectation, not the manager's expectation, the market is required to make a conjecture about what it thinks the bias manager will choose. Denote this conjecture as a  $\hat{b}$ . Under this conjecture  $E^M[x|y] = y - \hat{b}$ . That is, the market would simply take the report  $y$  and subtract  $\hat{b}$  from it as the best-response. Now the manager knows this best-response by the market and substitutes this expression into the manager's objective function, we have  $\theta E[y - \hat{b}] + (1 - \theta)E[x] - C(b)$ . From the manager's standpoint, bias  $b$  is a choice variable, not a conjecture, so the objective function becomes  $\theta E[x + b - \hat{b}] + (1 - \theta)E[x] - C(b)$ , yielding a solution of  $b^* = \theta/k$ . To complete the proof, since the game structure and all parameters are common knowledge, the market's rational equilibrium conjecture,  $\hat{b}$ , should also be  $\theta/k$ ; thus,  $\hat{b} = b^* = \theta/k$ . The key to this surprising equilibrium is that in the maximization problem, the market conjecture is taken as a given (i.e., not affected by the actual bias choice). To see this more clearly, we can put the true conjecture back into the optimization problem:  $\max_b \theta E \left[ E^M[x|y, \hat{b} = \theta/k] \right] + (1 - \theta)E[x] - C(b) = \theta(b - \theta/k) + E[x] - C(b)$ , yielding the same solution. To gain intuition yet another way, suppose the market believes the report is "honest":  $\hat{b} = 0$ , it follows that it is not economically rational for the client/accountant/auditor to choose  $b^* = 0$ , because it does not maximize the objective  $\theta E^M[x|y, \hat{b} = 0] + (1 - \theta)E[x] - C(b) = \theta b + E[x] - C(b)$ .

Generally, it is unclear whether all investors are reasonably expected to be aware of specific detailed opportunities and constraints that allow the biases to be introduced into the report. A slight modification of the economic model of reporting bias is illustrative here: suppose the bias

the client/accountant introduces contains some noise:  $b^* = \hat{b} = \pi + \tilde{\epsilon}_b$  where  $\pi$  is a known constant and  $\tilde{\epsilon}_b$  is a mean-zero random variable known to client/accountant but unobservable to the outsider market participants. In this case, each client/accountant would bias the report by  $b^*$ , but since the market participants observe only the total report  $y = x + \pi + \tilde{\epsilon}_b$  and are thus able to infer the expected bias,  $\pi$ , not the true bias,  $(\pi + \tilde{\epsilon}_b)$ .<sup>7</sup> In this more general case, the behavior of adding bias into the accounting report is undone by the market participants only to the extent of the expected bias<sup>8</sup>, not fully as in the original model.

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<sup>7</sup>The equilibrium outcome of can be rationally sustained by the following modification of the original model. Suppose the cost of bias is changed to  $C(b) = \frac{k(b-\epsilon_b)^2}{2}$  where  $\epsilon_b \sim N(0, \sigma_b^2)$ . Thus, there is randomness in the cost of bias, and the client/accounting observes the cost parameter  $\epsilon_b$  before choosing the bias  $b$ . Then, it can be shown that the equilibrium bias and confirmed conjecture become:  $b^* = \hat{b} = \frac{\theta\sigma_x^2}{k(\sigma_x^2 + \sigma_b^2)} + \tilde{\epsilon}_b$ . See Dye and Sridhar (2004) for details.

<sup>8</sup>equal to  $\frac{\theta\sigma_x^2}{k(\sigma_x^2 + \sigma_b^2)}$ .

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