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Mr. Chairman and Honorable Commissioners:
The SEC announced it is soliciting comments to help itself understand the extent and nature of public interest regarding the task of evaluating and assessing internal control over financial reporting (404). The SEC states the goal of this solicitation is to "address the needs and concerns of public companies, consistent with the protection of investors." This is the second of three submissions to support reaching the *protection* objective.

It is a jolt to think, in SEC's view, that the needs and concerns of public companies are materially inconsistent with protecting their investors. How in the world did that fiduciary disconnect escape detection for so long in the first place? Perhaps the goal misalignment explains why SEC's original cost estimates of 404 compliance were low by stunning amounts. Is it prudent to elaborate on internal control before fixing the zenith problem of incongruent goals? Not by the conditions of my license.

Synopsis
By design, the first response to your concept release covered the essentials of appropriately laying the keel of this significant project – a task engineers call "The Front End." The task of "internal control over financial reporting" to the paramount end of stakeholder protection is exceptionally challenging. Besides the usual nest of conflicting constraints and hidden agendas, internal *control* design runs the gamut of institutional ideologies with the corporation, regulation, and each category of stakeholder. Opaque cause and effect (subjectivity), dignified with rhetoric, shields fraud and waste.

The mission of this second submittal is to review the material conflicts detected between your stated methodology for attaining your stated goals against the venerable engineering benchmarks of immutable natural law. It only takes one protracted attempt at defiance to sink the ship and the benchmark includes many laws. Not only must the goal-seeking approach align with natural law, the tasks must be choreographed in a coherent knowledge building sequence. There are examples of "ready, fire, aim" all around the 404 dilemma. The internal control design quandary, due to serious complexity, cannot be solved at the level where the rubble is encountered.

Introduction
The simple answer that *parens patriae* organizations commissioned to protect investors can be effective watchdogs, is offset by the fact they aren't. The North American Securities Administrators Association (NASAA), as one example, claims protecting investors as its sacred mission. The recent study by NASAA on religion-related scams shows that, on its watch, sums stolen have risen from $450 million to $2 billion in five years. This is hardly the stuff of stakeholder protection. The gross mismatch of method to challenge is so habitual for protection, no one connects means to ends and no one keeps score. This stable condition is a manifestation of rule-based behavior.

To be effective in nailing a moving target, such as protection, it is necessary to accommodate the key attributes of the evolving challenge. The dominant feature of prevention is change with time - dynamics. In the universal dance with the second law of thermodynamics, the only item that remains constant is the abstract mission of stakeholder protection. Everything else is in transition at various rates. When the goal is an adaptive husbandry keeping pace with incessant system changes, there is no such thing as claiming final victory and sending everyone home. To attain and sustain the effective protection state, "You have to earn your wings every day." This means protection of investors can only be achieved through a continuous learning process collaborating with redesign decision-making close to the workface - husbandry in classic form.

The only design methodologies that can be objective and effective with change over time must rest upon the calculus, which is why Newton and others had to invent calculus in the first place. While everything is itself changing, all the relationships are changing and some change is accelerating and the accelerations are changing. This Mixmaster of dynamics makes for a complex soup. Calculus, as the only body of natural law, or mathematical physics, that embraces time as a variable in the equations, is a primary tool in the attainment of internal control transparency. The affirmation of mathematical physics is that, like music, it is accepted as a global language.

Complexity meets check-the-box

As system relationships entangle, very soon, because of the exponential way complexity compounds with more elements, the net effect of the future system state cannot be determined within the computational capacity of human mental apparatus (forget committees). The red flag of complexity is raised when it becomes impossible for the SEC and the regulated head shed to find out what's *not* going on. Further, the record of informed judgment in guessing such projected system states (as in Iraq) is abysmal. Current research on the efficacy of judgment and intuition in the handling of complexity attests to the poor record – that visceral is invariably worse than random selection. Knowing this, the PE allocates his efforts instead to building a robust model out of participating natural laws and putting calculus (mathematical physics) to work.

The rate of advance in the technology of engineering foresight is increasing because the success of this zero-subjectivity approach (e.g., smart weapons) has shown spectacular advantage over guesswork – even by the best designers. The latest management fad published in HBR, "Evidence-based Decisions," is another in the long line of attempts to enhance the success rate of subjectivity before it is overrun by engineering foresight de jure. Because engineering foresight is able to leverage advancing computer power for the purpose of amplifying intelligence, while subjectivity remains boxed in a fixed cranium, it is no contest. Hopefully, the SEC will recognize that pulling rank to boost executive judgment over de facto transparency is backfiring at increasing rates.

Since the composition of elements that comprise stakeholder protection changes with the arrow of time, the approach must be competent in goal seeking and support goal husbandry in an environment of irregular and often novel upset. Up to a level of disturbance the media would today characterize as a "tipping point," business as usual of the institution (hindsight with crisis response) is parsimonious. Once that zone of control is exceeded by alien disturbances, however, business as usual becomes progressively counterproductive. Institutions deflect attention from these persisting inequities by making insubordination a deadly sin – so the problem intensifies. As your own institutional record attests, when business as usual encounters protracted circumstances that render its methodology counterproductive, as for 404, more of the same just piles the wreckage higher.

Coherency and congruence

The SEC should recognize, at the outset, that the impersonal, indifferent guarantors of failure have nothing to do with human intelligence, qualifications and noble intentions – which the SEC has in abundance. Your continual failure to prevent fraud and scandal, e.g., is assured because the methods you employ are incompetent to engineer the future to align with your mandate. Navigating by the rear view mirror with a trunk full of emergency response gear has insurmountable limitations for hitting a moving target in front, such as protection. A viable remedy for 404-class issues does not exist in your history.

The strict limits of effectiveness for business as usual, measured by the characteristics of the disturbance, cannot always be compensated through crisis response apparatus no matter how world class. When the challenge to be addressed exceeds those limits, as in Katrina, business as usual plunges into quicksand. Institutional response to crisis amounts to yelling "theater!" in a crowded fire. The methodology effective for challenges beyond the realm of obedience to authority is attended by a context incompatible with institutional norms – the main reason the method is organizationally rejected in the first place. This is a

social system rejection, not a technology limit. Moore's Law has already rocketed engineering past the competency limit of engineering for which institutions are designed to control.

Your pursuit of efficiency via rules is counterproductive to your aim. The rub is learning. As research by Axelrod and his BACH colleagues (U of MI) have recently affirmed, some amount of inefficiency attends all exploration. The maximally efficient process, compliance to rules, cannot learn and therefore cannot survive. Engineers and designers have lived this axiom for millennia as run, break, and fix (RBF). Only a learning process can repair itself, reinvent itself, and transform itself to husband desired dynamic conditions under disturbance. Learning is not considered consistent with obedience to authority.

The second swamp to business as usual, as *parens patriae* of investors, is mistrust. The unexampled devastation wreaked by corporate corruption, nested and seemingly endless, condoned by all the watchdogs and gatekeepers installed and entrusted to protect stakeholders, has made a big withdrawal from the stakeholder trust account. The SEC may have dodged legal culpability for the Enron class wreckage, but the kind of deception and untrustworthy behavior of the official watchdogs has drained trust from the regulatory arena. The SEC is grossly underestimating the impact of trust lost to the demonstrated but unacknowledged limits of regulatory business as usual.

Schweitzer and others (Wharton) have recently elaborated the sociotechnology of "trust." The new report (July 2006) "Restoring Violated Trust" is widely available. Defining trust as the "willingness to accept vulnerability based upon positive expectations about another's behavior," the research shows the effect of untrustworthy environments on productivity. When intentional acts of deceit attend untrustworthy behavior, full recovery of trust is impossible. In my view, if the SEC persists with business as usual for 404, it will cross the line to where the wreckage will be considered intentional by those vulnerable to damage.

One of the biggest reasons PEs enthusiastically adhere to the PE standard of care, in spite of the head-on collision with institutional ideology, is to husband trust – a vital condition for goal seeking collaboration. In any design process, the resources to push the project ahead through the mire of distrust are at least ten times larger than when trust reigns. The Big Dig is an example of operationalized untrustworthy behavior. Early on, everyone knew the project methodology was a disaster. Management pushed ahead anyway, well aware of the mismatch. The result was distrust at every level, lasting two decades. The record of the fiasco speaks for itself. Several nuclear power plant projects were pursued the same way, destroying the power industry in the process. It is a pattern easy to distinguish.

Rules collide with reality

Your concept release wrestles with the demand for more "guidance" to be provided by the SEC to the listed. There is nothing wrong, of course, with the elaboration of information – design being but knowledge building punctuated by decision. The critical issue here is that the appropriate entity to be elaborating the guidance, doing the learning, must be your constituency. As self-proclaimed protector of investors as the end sought, the SEC must shed all authority with means.

As the Amicus you provided to refute the DOJ Amicus (one of your turf battles) claims, the SEC is the long-appointed top gun in stakeholder protection and its regulated institutions have immunity from the laws of other would-be regulators. If you really wish to protect the future of investors, and your regulatory turf, you will employ the *only* method proven to succeed for future-centered goals.

You will define your goal with objectivity, coherence and in unambiguous measurable quantities. You will then define the prize for goal attainment, adjusting the value of the prize commensurate with the effort required. You will lastly announce the goal, the specifications for winning the prize, and *wait*. This is how DARPA got the Internet and the Robocar. It is how DARPA is now getting unmanned vehicles that drastically change how war is conducted. This is how man flew across the English Channel by his own effort and arrived in space on the cheap. You will not guide the contestants. They will guide themselves. All you

have to do is buff the specifications of your goal and prepare the prize for delivery. You have not so much set your 404 goals too high and failed to reach them; you have set your goals too low and succeeded.

It is easy to tell when a project run by an institution is past the mismatch tipping point. Project objectives are not met, the budget is spent, and participants are miserable. The institution's hierarchy flogs the workers to make business as usual attain the goal, specifying both means and ends (a natural law no-no), and the result can only be displays of loyalty to the established rules of action. The goal is set adrift to fend for itself. The case here, the SEC handling of 404, is a classic example. Knowing that rules of action in mismatch conditions lead away from the stated goal, the regulated are anxious to get their rule set so they can steer clear of the DOJ Thompson Memo, leaving the SEC to hold the bag.

Unless the SEC accommodates the inherent attributes of the stakeholder challenge in internal control system design, there is nothing anyone can do to relieve the pain. This is not a case of starting fresh with system design. The regulated already have internal control systems, entirely pleasing to management, in service. Beyond meeting the natural hostility to change, the task here is to reconcile the ongoing husbandry practices for internal control with the SEC mandate. Protection dynamics has made regulation by rules of action (hindsight) obsolete de facto – but not de jure. One indicator is the routine of GAO bashing the SEC, such as with the restatement gap. Your system makes their task easy.

Considerations

The SEC should be more concerned about the aims and functions of the head shed than its morality. There is nothing presented about the mismatch that the SEC cannot see for itself. The evidence is overwhelming. Saddled with a toolbox that only contains rules of action and regarding indecision as a meritorious work, the SEC is facing a challenge in design that is impervious to remedy by institutional ideology. If you wish to achieve your stated goal of stockholder protection, there is no choice but to supplement rules of action as the regulatory device. The internal control fiasco of the government in Iraq reconstruction projects, leading to monumental waste, provides a current reference example of the utter failure to prevent economic calamity by hindsight and crisis response. Those billions are gone.

The goal of the oversight agencies, activated only after big damage is done, is confined to incarceration of the offenders. How long the ruined stakeholders will take punishment of wrongdoers as full substitute for recovering their monetary losses, is anyone's guess. It is already apparent, from the frequent Congressional hearings of these institutional failures, that the members of Congress, caught in the middle, are well aware of the common patterns. Stakeholders will eventually recognize that representative government means, chiefly, representation of business interests. When trial lawyers use the "foreseeability" of tort to recover losses caused by the supremacy of business interests over the combination of good sense and gospel truth, they will become the de facto regulators of business as usual.

Engineering benchmarks: A matter-of-fact point of view

As looking ahead is the basis of man's rationality, engineers are driven by a simple but incessant inquiry – What's next and why?

The easy answer that your market system *can* handle these matters is settled by the long record that it *hasn't*. Detection of misalignments, benchmarking by engineering principles, is the never-ending chore of the faithful sentinel. The fact that society despises engineers does nothing to persuade natural law to give society a pass. While there is no statute saying that people must like natural law, the laws of nature are indifferent to culture and perfectly impartial. Emotion and subjectivity regarding natural laws can run free - but it doesn't change anything that matters to reaching objectives.

Engineering focus is not on the question of what ought to be done, but what is to take place ahead. With a facility for taking eye to the future, amplifying intelligence, and respecting the forces of nature, the engineer is not directed by a proclivity to effort; but to achievement – to the compassing of an end. Engineers just

don’t see any point in getting cute with omnipotent, omnipresent laws of nature. Why make it a poker game with something that can’t lose? Besides, once you can accept universal laws as supreme, you can knowledgably leverage them to great advantage. They are as indifferent to your adversaries as they are to you. Thanks to unbridled computer power, engineers can experience the clout of natural law without physically getting punished from their errors. Discounting valor in the pursuit of the impossible, we can now affirm compliance with natural law in advance.

Auditing the SEC regulatory efforts concerning 404 by standard engineering benchmarks, one does not have to go far to find conflicts with universal principles lethal to attainment of the stated goal. While stakeholder losses are never mentioned, they are and will remain the central measure of protection efficacy.

The great SEC dilemma, from the PE’s viewpoint, is that the flow of corruption (daily public news) is far, far greater and faster than the legal response machinery can process. The cycle time mismatch is like several years. The pileup of cases in process is already a choke point. To make matters worse, the SEC is now spending unexampled amounts of resources defending its turf and actions - money that ought to be going towards its mission. As frequently mentioned in my commentaries, unless the input flow of scandal, embezzlement, fraud and corruption is attenuated, the SEC will get no return to peace. Treasury Secretary Paulson did not help matters with his recent public remarks referring to SOX – “often the pendulum swings too far, when it comes to corrective measures concerning corporate scandals.” The public quietly wonders what planet he came from.

Pulling rank in the face of brute facts is not getting the usual bang. Social effects are short lived and the risk of ending up on the wrong side of the future is multiplied. Stakeholders no longer think businessmen would better run government institutions. This is a sea change in the traditional public perception of institutional process. The stakeholders don’t regard the businessmen entrusted with their future apart from their regard for the watchdogs and gatekeepers established to protect them. When trial lawyers can find a way for damaged stakeholders to even this lop-sided relationship, and they will, the result will be a litigation tsunami – marking the advent of regulation by tort’s standard of care.

Take note that, at this time, many of your sister institutions in government are in a similar quandary – where looking behind has failed to deal with problems, immune to hindsight practice, that stakeholders think could have been foreseen by looking ahead through the spyglass of available technology.

Time

The first step is to accept that your mandate to “protect investors” is a future-based task in design. The setting of your objective in the moving frame of future time, by itself, eliminates rule-based methods for this mission. All the rest is secondary.

The SEC operates on a platform of hindsight and crisis response. Action initiates only after a rule has been violated, stakeholder damage has been done, or both. The N.O. levees were strengthened by heroic emergency response, e.g., days after the city was flooded. Causes of damage and violation are benchmarked retroactively, as in tort, if at all. Yet, the goal incessantly heralded by the SEC, investor protection, is an objective impossible to attain retroactively. It is natural law, not personality, which makes it so. Crisis response at its best has limits. Ask Humpty Dumpty.

The brute fact is that SEC monitoring and enforcement does not encompass contemporaneous protection practices. The SEC does not initiate proceedings against an organization that is failing to do those duty-bound tasks necessary and sufficient for “protecting investors.” BP management chooses to ignore the compelling data on its oil pipeline corrosion in Alaska and nothing happens. The pipe finally fails and BP gets world attention – and higher prices for its oil. Until the SEC brings this time disconnect into its consciousness, as the PE must, business as usual will keep protection of stakeholders permanently out of your reach. Viewed the opposite way, if the goal was to prevent the SEC from protecting investors (so the

hierarchy could siphon the money with impunity), it could do no better than run the system it has. The comments of Viets, a distinguished Arthur Anderson veteran, independently attest to the condition.

Intrinsically, stakeholder protection is a moving target locked to the future, publicly graded by history, with contemporaneous assurance of attainment a condition of my PE license. The mission profile for protection features unlimited time - the mission never ends - and a zone of tolerable damage. Protection requires proactive alignment with the future through task actions in the immediate present - draining history of its lessons as fast as it accumulates. Since everything is varying with time, initial attainment of the goal just signals the beginning of the husbandry phase where change to the initial control system continues in step with novel disturbances (adaptive control). Protection is a process of "foreseeability" executed well before stakeholders are wrecked. It has a social dimension.

In the case of protection attained, the protected go about their business oblivious to the shield. Only the nerds doing husbandry, making damage not-happen, know what is going on with prevention. If you want plenty of social intercourse and media attention, keep the system you have. The risk to SEC is that when the stakeholders take the discrepancy between what you espouse and what you do (the purpose of the system is what it does) as deliberate deception – the loss of trust is not recoverable. For now, you can feign ignorance and continue to publicize the grandiose goals your methods cannot attain.

The dominant time orientation of the SEC can be verified within SEC by taking the rearward/forward sorter about your own operations. For example, the SEC crisis response divisions and offices are models of well-organized high performance operations. To your credit, your various resources for handling rule violations and corruptions subsequent to damage inflicted are world class and your litigation moves along the beaten path as fast as the legal process will permit. However, if you will just investigate, you will find that your emergency response scope contains zero enforcement for contemporaneous failures to "protect investors" – before any damage takes place. When your arsenal contains only damage response apparatus, preaching the goal of protection for stakeholders to your constituency temporarily blinds the stakeholders to their predicament. Putting the masterminds of corruption behind bars after they have succeeded does nothing to protect damaged investors from loss incurred.

Ashby's Law

When the principle of defiance avoidance is applied to this regulatory effort towards protection, the fatal collision is with Ashby's Law. The dynamics of the mission profile, composed of both attainment and husbandry of control, places Ashby's Law in gatekeeper position. The variety of conditions the regulated may exhibit is far larger than rules can control. Even though society abhors Ashby's Law, ignoring Ashby in future think guarantees defeat.

As long as the regulated can function with opaque cause and effect, through subjective linkages legitimized by the rule maker, it will always win over rules of action. The outcome doesn't depend on how well the rules are written. The backward look of rules is unrelated to the goal of protection because the rules have become the regulated's surrogate for goals. You must first switch the level of the arena to ends rather than means. There you have an Ashby-enabled chance to level the playing field by defining goals in terms of performance success criteria. This is the power of tort's "foreseeability," where the dispute spins about actions taken to anticipate and prevent the damage incurred.

Cognitive dissonance

As standard guild practice, the PE examines characteristics of the proposed objective carefully. It is acutely necessary to classify the goal's time domain, complexity, novelty and cognitive demand up front. The project method and its associated context must align with the critical success factors. Start with a mismatch and your stakeholders end up with wreckage.

There are few examples of cognitive mismatch, a disparity between amounts demanded and quantities supplied, brighter than 404. In sum, the regulated as institutions running an ideology based on obedience to authority limits their employees cognitively to the “operator level,” rules-based behavior. “Theirs is not to question why: theirs is but to do or die.” Dealing with future-based goals like protection, however, requires cognitive efforts in the “designer” class, which is at least two orders of magnitude higher than “operator” grade mental exertion. (The intermediate magnitude bracket is called “maintainer,” the lowest “experiencer”) Grasp this brute fact and one can see at once why the regulated are clamoring for the SEC to translate its 404 goals into rules of action. The cognitive demand necessary to deal with future-based goals, like protection, is forbidden throughout the institutional context. In short, when you ask the regulated to protect their stakeholders, you are asking your constituents to do organizationally what they may not. This mismatch matter is nested and operationalized at all venues. You can test this one at home.

Only masterless men in collaboration can do engineering foresight – fundamental to attaining protection and its husbandry. You do not have to find this breed congenial to find it helpful. Guidance from the SEC to the regulated about *means* defeats the stated intent (ends) of the SEC. When you specify rules of action in the same breath you specify objectives, what you get is rule-based behavior. It’s getting to be high time you acted like you knew that.

The last submittal in the series of three will discuss methods proven successful in internal control design where stakeholder protection is paramount. This convenient means to submit solicited commentary is greatly appreciated.

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