

**Positions Available**

**FACULTY POSITION**

**Materials Science and Engineering  
The Pennsylvania State University**

The Department of Materials Science and Engineering at Penn State is seeking applicants to fill a tenure-track position in The Metals Science and Engineering Program, at the assistant/associate level. Preferences will be given to candidates with a strong interest and expertise in physical metallurgy; e.g., microstructure/property relationships as they apply to joining, solidification, processing, and other industrially relevant applications of structural materials.

The candidates must have demonstrated a strong academic record, an outstanding potential for independent research, and a commitment to teaching both undergraduate and graduate students. Please send curriculum vitae with a list of publications, names of at least three references, and an abstract of research and teaching interests by **Wednesday, January 7, 1998** to Paul R. Howell, Chair, The Faculty Search Committee, Metals Science and Engineering, P.O. Box M, 209 Steidle Building, University Park, PA 16802.

*Penn State is an equal opportunity/  
affirmative action employer.  
Qualified minority and female candidates  
are encouraged to apply.*

**POSTDOCTORAL POSITION**

**Chemical Processing and Electrochemistry  
Carnegie Mellon University**

The department of Materials Science and Engineering at Carnegie Mellon University invites applications for a postdoctoral research position in the area of chemical processing and electrochemical characterization of electrode materials for rechargeable lithium-ion batteries. Current efforts are focused on chemical synthesis of lithiated transition metal oxides using novel chemical approaches including sol-gel and colloidal precipitation, and determining the electrochemical performance of these cathodes.

Candidates must have a PhD degree, preferably in materials science and engineering, with strong expertise in chemical processing, electrochemistry, and crystallography. Candidates should be familiar with the use of potentiostat for testing the electrochemical response of the electrode materials and in the Rietveld refinement procedures for determining crystal structures.

Interested candidates should send their curriculum vitae and the names of three references to Professor Prashant N. Kumta, Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA 15213. Refer questions to 412-268-8739, or send fax to 412-268-7596, or e-mail to [kumta@cmu.edu](mailto:kumta@cmu.edu).

**Services**

**PATENT ATTORNEY**

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Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

**POSTERMINARIES**

***The Death of Nuance<sup>†</sup>***

**Executive Summary**

The thesis is presented that the net effect of executive summaries on understanding concepts and situations is negative. It is contended that subsequent decision making is therefore flawed and has negative consequences. This report notes that reports by experts analyzing these consequences usually begin with an executive summary. It is therefore concluded that a cycle of decay progresses on a downward spiral of comprehension acuity in the board-room. Possible remedies are considered ranging from elimination of summaries to elimination of executives.

<sup>†</sup>Inspired by the stanza from the Grocer's Apprentice, "Best mark these words well \ With no ifs, ands, or buts \ If it comes in a nutshell \ It's invariably nuts."

**Body of the Report**

**Findings**

**1 The inverse relationship between jurisdiction and comprehension beyond saturation**

The rationale is simple. The higher in an organization an executive is, the more responsibilities he or she has. Therefore the larger the amount of relevant information pertains to the duties of the office. The length of the work day and work week is ultimately finite, even for workaholics. There exists even for the most agile of mind a limit on the rate of information consumption and digestion per unit time. Therefore the amount of absorbable information per area of responsibility must decrease with elevation in the organization above a certain level.

**2 One solution**

This is not news of course. So, in theory at least, some solutions have been formulated. One is called delegation of responsibility and authority. With this approach, the executive gets summaries of results of actions taken by subordinates. The wise leader then mixes in some vision of ultimate goals and delegates more authority to produce more results. Sounds a bit naive but it works whether commanding a battle in a theater of war or conducting an orchestra in a theater of peace.

**3 Another solution**

Another solution, however, is the executive summary that prefaces a full dissertation on all ramifications of a situation. Frequently accompanying these scant few paragraphs atop a

comprehensive tome is a request for some kind of decision, one that may be complex in its trade-offs and implementation. This is a bit like basing a battle strategy on the first attack or critiquing the composition based on the overture alone. Aside from surrendering to the limited and decreasing attention span of the species, there is built into this approach a fundamental paradox.

The authors of the full report, we assume, have a thorough and penetrating understanding and appreciation for all matters, from the blatantly obvious to the cunningly subtle, that bear any relation to the subject of the report. They very likely have backgrounds in training and experience that are not only exquisitely suited to their chosen areas of expertise but that, other things being equal, are just those you would want someone to have if they were making decisions in this particular area. Other things must therefore not be equal. There must be considerations issuing from beyond their particular field that impact or are impacted by any such decisions, raising that prerogative to a floor with windows that offer a broader view.

## 4 The loophole

Of course, such is the standard rationale for the management pyramid. But, who trains the experts below decks in how to communicate the essence of their understanding to the bridge in 500 words or less? Who tells them how to choose what to include, what to finesse, and what to skip? How do they guess which aspects of what they know will be both relevant to the broader view, which they themselves are supposed to lack, and still fit into the textual analogue of a sound bite? What innocent incomplete point is liable to send their bosses off on unfortunate tangents and is thus best omitted? Which are the truly bottom-feeding details that only analysts adore, and which have the devil in them? Presumably, if the *précis* is inadequate, questions will come down and clarification can be served up. Unfortunately, the questions too often betray little depth of understanding and the answers must be an order of magnitude shorter than the abstract itself.

A scientist cramming all relevant technical expertise into five minutes of testimony at a congressional appropriations hearing hardly has the opportunity to relate microgravity to foreign relations, Higgs bosons to local economic impact,

and university research infrastructure to veterans' benefits. The shades of meaning and gradations of consequence then certainly must be overlooked. We know the case for R & D as an investment, once the latest sensational breakthroughs are covered, rests on an intricate and tenuous set of interconnected arguments which none of the policymakers have the time or patience to understand, let alone to believe. What we experts in this or that know to be the crucial, logical, albeit complex linkage that must be appreciated for intelligent decision making, winds up buried and trivialized as mere nuance in the verbiage of a full report or written elaboration of testimony destined for a dusty shelf.

## 5 Insidious feedback

The frightening thing about relying on snippets is that fewer and fewer of us realize that's what we're doing. Consider how e-mail has conquered communications at a distance. The pen may be mightier than the sword, but apparently not mightier than the internet. The psychology of the internet is peripatetic. We don't compose lengthy communiqués of substance and depth. We hop on, jot (actually key) a note, fire it off, check the in box, and sign off.

There is no more patience for downloading a large attachment than there is for reading past a preface. Colloquies have given way to searching lists of FAQs (frequently asked questions) to find the canned answer to a question that isn't quite what one had in mind, but that's better than waiting to talk to a human being (especially when the odds are increasing that even the human will be reading a pat script regardless of your insightful queries). The culture is therefore not only becoming comfortable with the superficial summary and essentially oblivious to its shortcomings, but it is also heading for the off-the-shelf executive summary that can be selected from pre-penned alternatives independent of the details of what follows, much like the business letter templates and wizards sold with word processors for users unwilling to think.

## Recommendations

### 6 Resurrecting nuance

What then can be done? Well, the first option is to do away with summaries of all kinds. No more condensed versions of novels. No more 30-second out-takes from political speeches,

especially if followed by extensive commentary. No more worrying about the great demands placed on an executive's limited time. If an executive hasn't the time to read a full report, don't shorten the message, just hire more executives. Not practical you say. Not realistic to envision a stable of managers each steeped in the nuance of their area of responsibility. Why, that would just extrapolate to a bunch of narrow experts like those in the bowels of the ship. Ah ha! The first option apparently then reduces logically to the second and preferred option. Eliminate all the jobs whose scope exceeds that for which one person cannot hope to digest all the pertinent data.

How then will decisions ever get made? The good news is that many won't get made at all and we'll have a lot fewer after which to clean up. Then the few remaining ones that really need attention can be handled by cross-functional (as opposed to dysfunctional) teams. Such teams, their reputations stained by their own TQM-esque parentage, are said not to work without the oft absent full-fledged, sincere support of upper management. In our case, they replace those that would hobble them and voila!, nuance survives.\*

### 7 Epilogue

You may have noticed down here at the end that there are no obligatory long lists of endnotes and citations characteristic of a complete, credible, even scholarly report. It's too long already. You may also have discerned that no explicit mention in the body of this report is made concerning the thesis of the "downward spiral" that was alluded to in the executive summary. This may disturb you. You may also not agree with any or all of what's been written here. But, no matter. You see, by reading clear to the end of this *Postterminaries*, you have revealed a trait that clearly disqualifies you from any influential level of upper management, and your disapproval will be duly noted in the body of the next report.

E.N. KAUFMANN

\*Lest this be mistaken for being tantamount to the dictatorship of the proletariat and the organizational analogue of collectives and communes, be assured that we envisioned this model actually enhancing the fortunes of cut-throat capitalists at the expense of the great unnuanced masses.