

# Insight and Ideas

Charles L. Owen

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## Abstract

*Contrary to some thinking, obtaining insights usually requires hard work and persistent questioning. Edison was right, it is 99 percent perspiration. That said, the pursuit of insight is critical to innovation. Insights come as the recognition of pattern—of cause/effect, mechanism, structure, relationships, process. As penetrating views, insights enable the planner or designer to create with the elegance that comes from understanding the structure of a problem.*

*Design Factors are documents used in Structured Planning to capture insights and tie them to ideas for their use. Insights are not data; insights are information distilled from data. The process of obtaining insights is important and the form in which they are stored may make the difference between using and not using the information ultimately in the design process.*

*Design Factors contain both insights and ideas; ideas are sought at the same time that insights are gained. A Design Factor is a qualitative information element, ready-made for a qualitative knowledge base able to preserve the why information for a company or institution.*

Almost everyone is familiar with the famous Edison quote: "Genius is 1 percent inspiration and 99 percent perspiration". To know much about Edison's life, is to know that was certainly true for him—and many other creative individuals when you take the time to learn how they worked. Yet, there is still a strong sense among many that great ideas come to the gifted in the way lightning strikes, unpredicted and unexpected.

## Insights as Idea Sources

In my experience, great ideas more likely come from great insight. The insight may also seem to come suddenly, but it almost always is preceded by solid spade work involving observation, experimentation, thoughtful reflection and search fueled by curiosity and almost relentless questioning. The analyst who repeatedly asks the question, why, is most likely to be rewarded with insight.

It is through answering the why's that we set foot on the trail to insight. Insight is penetration, a view of the inner nature of things. That view may reveal pattern—recognition that when certain conditions are present, particular events almost surely follow. At other times, an insight may be more about mechanism, establishing how a cause or chain of causes generates a certain effect. Sometimes it takes the form of structure or a model that shows how phenomena relate to each other. It can also be about process—the steps that lead one set of conditions to change to another.

As complex and mysterious as it is, getting an insight is not anywhere near enough when it comes to planning or designing systems. Complex systems consist of many designed elements and relationships, all of which can benefit from insight. Understanding a system's potential users alone can provide a wealth of good insights easily able to shape innovative new directions. The problem is capturing them and making sure they get into the planning process. How insights are transferred from the aha! event to a usable form of information is an important part of the answer.

Some time, when you have an opportunity, ask about the research conducted for a project. Nine times out of ten you will get some variant of this answer: "right over here", and a hand pointing to a filing cabinet. In the filing cabinet will be reports, publications, ethnographic video tapes, copies of articles from journals, photographs, web screen-dumps, downloads and a wealth of other archived remnants of what was probably an extensive fact-gathering research activity. The problem is, this is data—undistilled—in its original form. It may have had great value in shaping the search, informing the planning team and even revealing insight, but in its original form, it does not enter the information stream in a way suitable to have impact in the several places it should. Worse, if it is considered at all, important details are likely to be forgotten, even mis-remembered.

Data is not information. Information acquires its value through distillation, interpretation and the revelation of insight. At its best, information has surprise, and one measure of its value is how much. A crucial step in the analysis phase of planning is the rec-

ognition of insight and the thoughtful communication of it in a form usable in the information flow.

**An Insight Document: The Design Factor**

In Structured Planning, insights are thought through on one-page documents called Design Factors (see the Figure). As in other phases of

the process, standardization is deliberately applied to the way in which information is presented, so that it can be readily contributed and used by anyone working with the planning process. A Design Factor document actually contains more information than just an insight, but we will get to that shortly. From the insight standpoint, the information is distilled into an Observation and its Extension.

<b>Design Factor</b>		Title: <small>Descriptive label for problem or insight (not solution). Exactly as on Activity Analysis form:</small> <b>Old Equipment Charm</b>	Number identifier: <b>24</b>
Project <small>Name of the project:</small> <b>Getting Around</b>	Source/s <small>Give complete reference information. Use <b>The Chicago Manual of Style</b> for format.</small>  <small>Examples:</small> <b>The System of Wire-Cable Railways for Cities and Towns.</b> San Francisco: Pacific Cable Railway Co., 1887.  <small>Souter, Gerry. <i>Some Unabashed Reminiscences and an Audacious Proposal.</i> <b>Chicago Guide</b> (July 1971): 12.</small>  <small>If personal knowledge only, use:</small> Personal Observation	Associated Functions  <small>The <b>Function</b> or <b>Functions</b> to which this information applies. Should appear exactly as on the <b>Activity Analysis</b> form so that there is no confusion.</small>  <small>Examples:</small> Reinforce positive attitudes Occupy waiting passengers' time	
Mode <small>Mode of operation or behavior:</small> <b>Use</b>	Activity <small>Activity under the Mode:</small> <b>Waiting</b>	Originator <small>Original producer (sponsor) of this document:</small> <b>M. Gardner</b>	
Contributors <small>Contributors of additions and/or changes</small>		Observation <small>A succinct sentence encapsulating recognized or observed phenomena with relevance for the project. Should strive to capture an insight, either about what goes right or what goes wrong. Leave the details for the Extension.</small>	
21 Sep., 1971 <b>P. Gleye</b>		Extension <small>Background, discussion, examples, quotes, causal relationships, tendencies—anything that can add to an understanding of the insight. Try to anticipate <b>why?</b> and <b>what do you mean?</b> questions here. There should be little question about the insight that the Observation highlights after reading this section. This is the section that provides the "qualitative knowledge" for the project—ultimately, why things will be designed the way they will be, so make it thorough, insightful and sharp!</small>	
22 Sep., 1971 <b>M. Gardner</b>		Reference a source at the end of a sentence or paragraph, e.g., (Souter 1971, 12)	
2 Oct., 1971 <b>M. Gardner</b>		Example: Ill-maintained equipment gives patrons the impression of slovenliness and neglect. It reduces patronage by those who have alternative choices. In fact, poor maintenance is largely due to the severe financial problems transit systems have come to face. Many systems have insufficient revenue to replace obsolete equipment, even through maintenance costs rise rapidly as equipment approaches (or exceeds) its normal service life (Souter 1971, 12).  On the other hand, well-maintained, old equipment can attract new riders and please old ones. The San Francisco cable cars, for example, have a charm unequaled by modern apparatus (System of Wire-Cable Railways 1887). Double-decked buses were used in Chicago until the 1950's, and Chicago at one time had the world's longest cable railway, moving at up to 13 miles per hour and carrying as many as 100,000 passengers a day (Souter 1971, 12).	
Design Strategies <small>Topical strategies for how to use the insight above. Should suggest directions for specific idea concepts in the <b>Solution Elements</b> section.</small> <small>Some general strategies to seed your thinking:</small> <small>Avoid the problem      Sharpen the concept</small> <small>Isolate the problem      Combine the concept</small> <small>Use imperative verb phrase format: &lt;verb&gt;</small> <small>&lt;optional modifiers&gt; &lt;object&gt; &lt;optional modifiers&gt;</small> <small>Examples:</small> Care for equipment _____ Emphasize charm _____		Solution Elements <small>Specify status: <input type="checkbox"/> Existing <input checked="" type="checkbox"/> Modified <input type="checkbox"/> Speculative</small> <small>Specific ideas. Should be well enough conceived to be capable of evaluation against all <b>Functions</b> for whether they support or obstruct fulfillment. There can be many, one or none for any specific <b>Design Strategy</b>. <b>Existing Solution Elements</b> exist from earlier work. <b>Modified Solution Elements</b> are suggested modifications of existing elements. <b>Speculative Solution Elements</b> are new proposals. Work back and forth creatively between <b>Strategies</b> and <b>Solution Elements</b> (general &lt;=&gt; specific). Invent evocative names both appropriate and memorable.</small> <small>Use noun phrase format: &lt;adjective&gt; &lt;noun or noun phrase&gt;.</small> <small>Examples:</small> <input checked="" type="checkbox"/> Identity-Element Maintenance Crews <input checked="" type="checkbox"/> Highlighted Antiques	
Version <b>4</b> Date: 2 October, 1971		Date of first version: 19 September, 1971	

Observations are succinct, usually one-sentence statements expressing the essence of the insight. In "Covering User Needs", I introduced the idea of Observations as qualitative information elements and the evolution of their form through experiments with different formats seeking greater information content and more natural grammar. A form we use frequently introduces a condition and then completes a pattern by noting the effect that the condition typically produces. For example: "While moving through open spaces, crew members may inadvertently contact equipment with their feet." This was a surprise to the designers of Space Lab; switches were being turned on and off unintentionally! We picked up this insight from their reports and used it in work we did for NASA on Space Station.

The form of the Observation isn't rigidly constrained to the condition/effect format, however. As long as there is insight, the statement has value. An example of another form is the Observation from the Design Factor in the Figure: "Ill-maintained equipment drives riders away; *well-maintained old equipment* often may attract them." This had direct bearing on concepts that we developed for Chicago's CTA transit system.

The Extension section of the Design Factor is used to carry on the discussion. Experience has shown that considerable value derives from distilling an insight to a single sentence. Through this process, what is important and not so important gets sorted out. But communication may also suffer from the distillation, and we found ourselves far too often asking "why" and "what do you mean by that" questions of Design Factor originators. The result was the Extension section, where these kinds of questions can be answered, and the insight augmented with additional information on causes, effects, relationships, contexts, associations, etc. that help to explain why the phenomenon exists.

### Combining Insight and Ideas

The Design Factor document, as earlier suggested, also contains other useful information. Contrary to the design model that suggests that the path of development progresses neatly from analysis to synthesis to evaluation in discrete steps, Structured Planning is much less firmly parti-

tioned. During the information gathering activity, when understanding and insight are being sought, the analyst is expected to think about solutions in the midst of finding problems—and to apply some practical screening at the same time as a preliminary form of evaluation. Thus, the Design Factor document in one place contains ideas as well as insight. The document's design takes inspiration from the fact that when an insight about a problem is gained, it is often easiest then to see solutions for it.

The bottom half of the Design Factor form is devoted to ideas. On the left, the view is strategic. In the document in the Figure, two strategies are given for using the insight that well-maintained old equipment can have charm: (1) care for old equipment, and (2) emphasize its charm. On the right, ideas for specific implementation of the strategies are given names as titles for "solution elements"—potential component concepts for a system solution: Identity-Element Maintenance Crews (teams that would be assigned to specific equipment to maintain as their own), and Highlighted Antiques (older devices, equipment and environments spotlighted with placement, lighting, painting and other attention-awarding means). The titles are place-holders for more detailed discussions and explanations documented separately. In my next article I will talk more about this and how best to capture ideas quickly and efficiently when they occur.

Insight is the motive force. In advanced planning for system concepts, hundreds of insights are needed. The reward is true innovation across the system. Making the effort to distill data to information and to standardize its communication has a big payoff. And the payoff continues beyond the project. Companies and institutions across the country lose highly valuable information every day as employees retire, change jobs and otherwise move within the organization or leave it. The data stays—the memos, plans, reports, drawings—but the reasons why things were done the way they were, disappear. The qualitative information—the why's, the insights—go. Probably billions of dollars worth of information are lost every year because there is no qualitative knowledge base to match the quantitative systems that most companies and institutions possess.

Design Factors are elements of that kind of knowledge base.