Cultural Mining:
Turning Small Insights into Actionable Design Cues

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Think globally, act locally. This has become a modern mantra for designing niche products that address a specific facet of market segmentation. But the local aspect of the intended product design might be fashioned for such uniquely different places as Hong Kong, Chicago, and Mexico City.

Industrial designers are trained to be experts in the process of product development, but how do they go about identifying the cultural subtleties and nuances that will allow the divergent locales to emotionally connect with the products?

Cultural mining is a design research technique extrapolated from traditional anthropology that focuses on gathering information and insights about the country or regional specific culture as it relates to the particular area of product or interaction under investigation. It is particularly useful when conducting cross-cultural research, to gain a deep grounding in the key aspects of the culture.

Before discussing the specifics of the cultural mining research technique to inform product (and GUI) design, this paper will first attempt to establish the foundation to validate this technique within the context of the modern practice of industrial design.

Research is a Craft

"Research is a craft… If you know what people have to go through to become skilled carpenters… you have some idea of what it takes to learn the skills for doing research. It takes practice, practice, and more practice."[1] Designers are all too familiar with the many hours of consistent practice that are required in order to effectively assimilate a skill into the designer's personal tool box. Whether it be learning perspective free-hand drawing or acquiring facility with a 3D modeling software, designers know that it takes considerable effort and repeated attempts to be able to eventually utilize that particular skill beneficially within the design process. Dr. H. Russell Bernard, renowned anthropologist for developing field research techniques advises his colleagues, "Expect that each time you do a research project, you bring more and more experience to the effort, and that your abilities to gather and analyze data and write up results will get better and better."[2] Such is the case with designers employing the cultural mining technique.

The questions designers ask about the human condition may vary across the different industries served, but the methods used to observe and study end-users in their environments have been primarily derived from anthropology and the social sciences. Designers are now making their own unique contributions to this field of design research. Industrial designers, through intimate collaborations with anthropologists, ethnographers, and marketers have become prodigious inventors, consumers, and adapters of end-user research methods.

At a strategic level, methodology is about choice. Which technique is the most suitable under the circumstances in order to quickly and effectively derive actionable results to inform the product design and development process? Designers, by their nature, are very much interested in employing experiential research techniques through observation. Early training in the profession makes designers aware that most people may *look* at a particular situation, but few people actually *see* the latent reality being presented. Similarly, just as most people will *hear* what's being said in an interview or informal conversation, few will truly *listen* to the underlying realities of the spoken word that may reveal some significant insight into behavior.

Social scientists and designers must always take into account what is referred to as the *common variables* – age, sex, race, income level, ethnicity, marital status, and occupation. However, social scientists seek to quantify and qualify all the information gathered regarding a specific user group; whereas, designers may be only seeking that one small kernel of insight that can lead to either incrementally improving an existing artifact or truly innovating the product category. Identifying more than one actionable insight would be considered a real bonus in the outcome of the process. This approach, process, technique, and outcomes can be considered *designerly thinking.*[3]

Designerly Thinking
Designers inherently desire to create artifacts that will not only fulfill their designated function, but also delight the end-user and in the process create an emotional connection to the product. In order to achieve this somewhat lofty goal, designers need to identify at least one new area of potential connection between the user and the artifact. But how can they achieve this information?

"If something exists, it exists in some amount. If it exists in some amount, then it is capable of being measured."
   —Rene Descartes, Principles of Philosophy, 1644

Researchers trained in the social sciences will want to identify something, measure it, analyze and evaluate it to reach some broader conclusion about that particular situation or condition. Designers are not motivated by the same results, but share the passion for the investigation. When examining a culture within the context of a targeted user group (market segment or niche), designers generally choose to observe that group within their natural environment in order capture one or more small habits or traits that could directly impact the design, development, and consequently, the outcome of the product design process. Cultural mining and design research are significant parts of the on-going debate regarding design and science. With the increasing complexities of the expanding global marketplace, segmented into localized niche categories, product developers "desire to produce works of design based on objectivity and rationality, that is, on the values of science."[4] Yet designers do not want to alienate the object from the user. Instead, there is a sincere desire to create emotional linkage between the two.

Le Corbusier wrote about the house as an objectively designed "machine for living: The use of the house consists of a regular sequence of definite functions. The regular sequence of these functions is a traffic phenomenon. To render that traffic exact, economical, and rapid is the key effort of modern architectural science."[5] Design methodology has continued to develop and emerge, as promoted by Herbert Simon as the "science of design."[6] Yet designers, although embracing various research methods derived from the social sciences still want to be able to rely upon their own rapid cognition and intuitive creative responses (I-Cubed), honed through experience[7] in order to not only fulfill a recognized feature requirement, but to enhance the experience of use through it. This is the emotional aspect of the design of artifacts that rejects "the continual attempt to fix the whole of life into a logical framework."[8]

This tension that exists between the rational and emotional are part of the creative process unique to the design disciplines. "The scientific method is a pattern of problem-solving behavior employed in finding out the nature of what exists; whereas the design method is a pattern of behavior employed in inventing things…which do not yet exist."[9]

Progressive Practice
In contemporary practice, many believe the reasons for advancing new methodologies are based upon the assumption that modern industrial design has become too complex for intuitive methods. Certainly the level of complexity has dramatically increased, as has the sophistication of the tools, yet designers are more concerned with deriving from the applied knowledge of the natural sciences appropriate information in a form suitable for use and actionable to inform the design process. If design methodology can be defined as the principles, practices, and procedures of the design and development process, then Cultural Mining may be considered one practice that falls into this category of investigation. Any newly integrated method, technique, or practice being explored within the field may be considered beneficial if its outcomes successfully impact its application to design problems, which in this case, relate to the

effective acknowledgement of one or more subtle differences of culture that may be functionally embedded into the resulting product design.

The modern practice of industrial design has moved more and more towards a field of interdisciplinary endeavor, accessible to all those fields that are "involved in the creative activity of making the artificial world."[10] Although the skill set of the industrial designer remains unique within all the design professions, methods like cultural mining are a direct outcome of the ongoing dialogue between designers and related disciplines that now share their experiences of the creative and professional design process in an attempt to elevate it to a new and more comprehensive level. "What they (industrial designers) especially know how to do is the proposing of additions to and changes to the artificial (man-made) world. Their knowledge, skills, and values lie in the techniques of the artificial."[11] Nigel Cross proclaims that professional designers must concentrate on the "designerly ways of knowing, thinking, and acting."[12] Within this context, it is important to be able to integrate the finer touch points of a specific culture to capture that peculiar function, interaction, or emotional appeal into the physical embodiment of the designed object. To this end, cultural mining can be a simple yet effective tool for identifying these potential seeds of innovation for the designer, and the product development team.

What Is Culture
So as far as industrial designers are concerned in the design and development process, what is culture? By *culture*, for purposes of this particular design research methodology, *culture* is referring to the United Nations Economic, Social, and Cultural Organization (UNESCO) definition:

> *"...culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs."*

Cultural Mining techniques provide a framework for designers to observe and record their impressions, as well as utilizing and organizing both primary and secondary research in a manner that is both insightful and visually engaging, and can be shared in a meaningful way with colleagues and other disciplines.

Multiple aspects of culture can be explored using this technique, including: language(s); home, work, and 3rd space environments; business and things people do as work, things people do for leisure, shopping and market places, religion, the arts, politics, and family life. This information is then used to create one or several visual matrices based on two thematic axes (*x* and *y*) that *best represent the perceived core values of the culture*. One or more of these matrices can be generated in order to visually examine different aspects of the culture under investigation.[13]
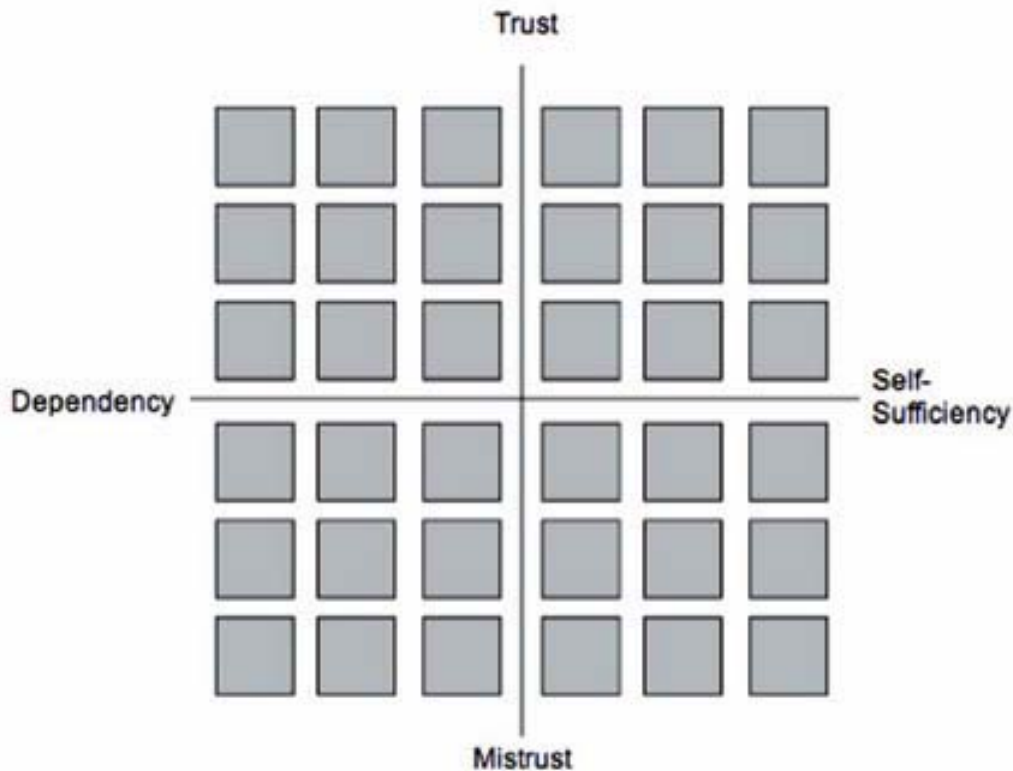
Trust

Dependency

Self-Sufficiency

Mistrust

Figure 1. Example of grid framework.

Primary
Employing this technique, designers and/or product development teams would conduct primary research in the field, recording their impressions through in situ photographs and descriptors capturing that moment according to the selected themes to be set forth on the matrix. In this manner, designers can conduct earnest primary research that plays to their visual image based proclivities. This technique can alleviate any general anxieties designers may have about text oriented academic style writing and provides a vehicle to successfully navigate between kinetic modes of studio production and the static and lineal modes of writing research reports. The matrix provides a simple grid framework for visual modeling, pattern formation, and eventually synthesis of the information captured in order to form an evolutionary hypothesis and subsequently, plan of action. The grid, being one of the quintessential tools of the design professions, is familiar, and can be transformed through this cultural mining exercise that represents the formal mapping of theoretical positions. These theoretical positions can then expand into problem framing (within the context that every identified problem is a potential opportunity), problem formation, and eventually, problem solving. This framework provides the opportunity to develop interdisciplinary expertise, to build confidence, and through evaluative argumentation, sincere interactive engagement focused on the common program goals.

The aim of this technique is to develop new knowledge about complex social phenomenon, particularly as it applies to sociocultural interactions with artifacts and interfaces. The mental image capture recorded and organized into this framework may provide the occasion for designers to build upon their design knowledge in a hybrid form that synthesizes the small yet telling details that may be revealed through this process in order to have a positive impact on the product development process. The images organized within the grid allow the designer to present a hypothesis; its relevance, accuracy, and quality, with authority based on experience and evaluative judgment. Most importantly, this demonstration of expertise and authority matters most if it translates into social capital and artifacts that delight the end users.

Secondary
Secondary sources, such as the internet, magazines, periodicals, books, local newspapers, advertisements, etc. may also be used to identify and acquire relevant images (pictures), data (words and numbers), and themes (words) that best convey the aspect of culture applicable to the product category and/or product system under investigation. In this context, data, refers to statistical information regarding - demographics; techno-graphics (e.g., penetration of a particular technology, if applicable); and consumer trends. In this context, themes, refers to descriptive words that represent key cultural aspects of the specific location.
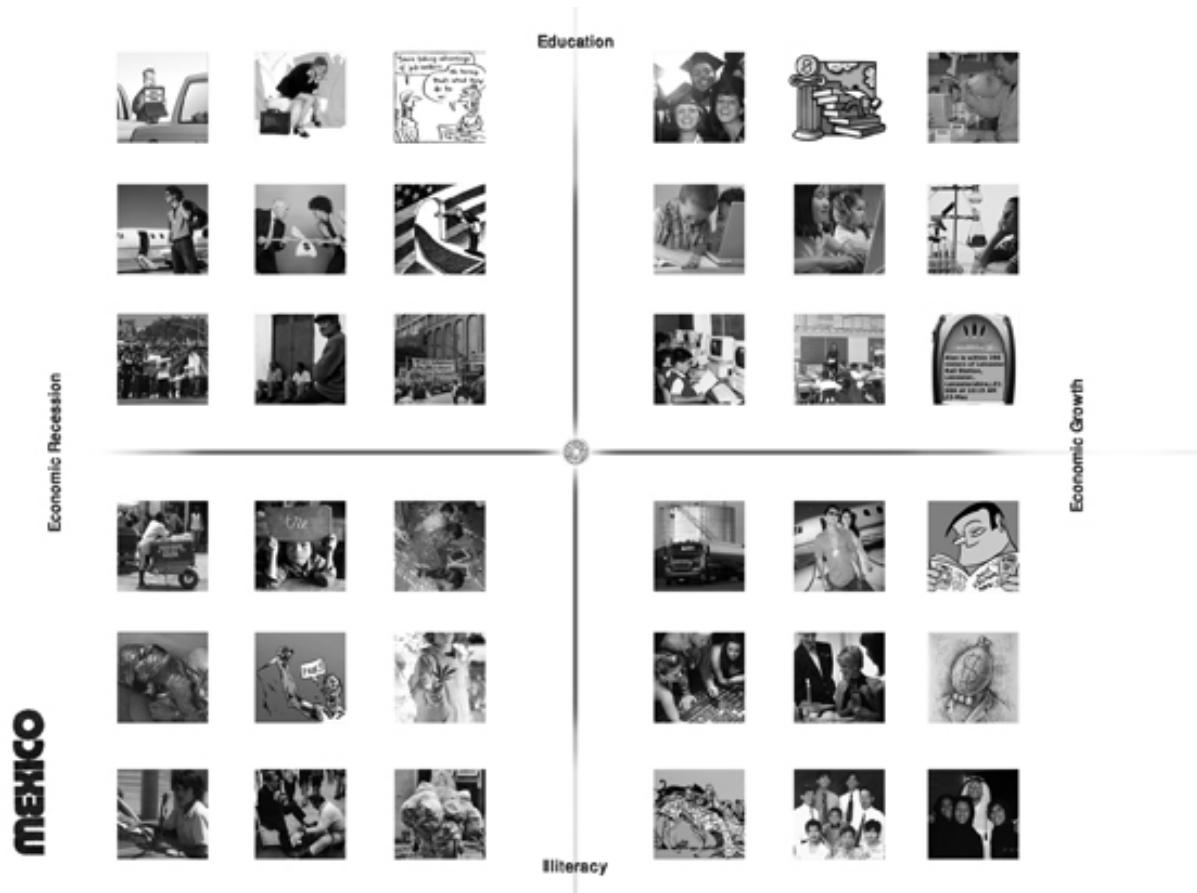

Figure 2. Example of nodes and mapped themes.[14]

Figure 3. Example of mapped images and text.[15]

Methodology
Images, words, and data are organized along the nodes represented by oppositional terms (e.g., education/illiteracy) that describe two key themes associated with the topic. The information is mapped onto the grid framework based on *relational proximity to the nodal themes and to each other*. "Visual citational practice can be achieved more efficiently through the 'holistic' and 'almost instantaneous' (rapid cognition) comprehension that images provide…The vividness of the images over the textual makes the information more compelling or 'navigable'."[16]

What is that compelling image? What does it mean in relationship to the other images displayed?

For the visually trained professionals, utilizing cultural mining as an indicative and informational strategy of diagramming best serves the use of images for the purposes of persuasion, to evoke feeling, and ultimately, provoke action. Some might refer to this tool as creating *practical intelligence.*[17] Practical intelligence in this context refers to showing the constituents of the product development process that this

is something useful for them to know; with usefulness being defined as having the power to create and change the world of artifacts and ensuing experiences.

Conclusion
Once the cultural mining exercise has been completed, the relevant data and themes are applied to the main axes on one or several matrices organizing the information into a meaningful and easily understandable format. Several hypotheses may be then formulated that lead to actionable steps to inform the product design process. This technique is deeply grounded in traditional research theory, as defined by consisting of four elements of inquiry: 1) questions, 2) assumptions, 3) methods, and 4) evidence.[18] The cultural mining grid framework is an appropriate knowledge production tool to inform product development within the context of high-level cultural inquiry because of its simple structuring of the process for gaining both broad as well as potentially deep insights.

References

[1] Bernard, H. R. (2005) *Research methods in anthropology: Qualitative and quantitative approaches*. Rowman & Littlefield Publishing.
[2] Bernard, ibid.
[3] Cross, N. (2000) *Designerly ways of knowing: design discipline versus design science*.
[4] Cross, ibid.
[5] Le Corbusier (1929) CIAM 2nd Congress, Frankfort
[6] Simon, H. A. (1969) The sciences of the artificial, Cambridge: MIT Press.
[7] Melamed, Stephen (2006) "I-cubed: Intelligent intuitive insight." *Innovations*.
[8] Jones, J. C. (1977) *Design methods and theories*.
[9] Gregory, S. (1966) *The design method.* London: Butterworth Press.
[10] Cross, ibid.
[11] Cross, ibid.
[12] Cross, ibid.
[13] Tunstall, E. (2006) *Experimentations in visual/textual knowledge production*. Chicago: University of Illinois at Chicago.
[14] Tabrizi-Charkhtab, M., University of Illinois at Chicago.
[15] Choudhury, L., University of Illinois at Chicago
[16] Hill, Charles A. (2004) *Defining visual rhetorics*, Mahwah, NJ: L. Erlbaum Associates.
[17] Tunstall, ibid.
[18] Barnard, A. (2000) *History and theory in anthropology*. New York: Cambridge University Press.