

What Does the Public Really Want when Engaging with the Nuclear Industry? – 15087

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ABSTRACT

The nuclear industry continues to evolve how it engages the public. A question to constantly ask is, “What does the public really want when engaging with the nuclear industry?” This paper helps answer this question most specifically in the area of nuclear waste management, disposal and remediation. It offers multiple theories from the social sciences, most notably the theory of “Dominating Concepts.” This is the theory that ideas that dominate the general thinking in an industry exert a powerful influence on how people think and act. By examining an industry’s Dominating Concepts, it becomes possible to recognize the unintended (undesirable) consequences. This awareness can be a catalyst for the adoption of changes to the general thinking --- of new and more useful Dominating Concepts.

In this paper, one Dominating Concept widely held in the nuclear industry is examined and it becomes possible to understand why the public may not respond to scientific explanations, why the public may distrust the nuclear industry, or why the public may engage the political process. In lieu of this Dominating Concept that produces these undesirable consequences, four new Dominating Concepts that lead to more desirable consequences are proposed.

INTRODUCTION

At times it might appear that the nuclear industry’s efforts to engage the public are fruitless, and the nuclear industry is doomed to be like Sisyphus, the character in Greek mythology who is compelled to roll an immense boulder uphill only to watch it roll back down --- and to repeat this action forever.

The intent of this paper is to engage the reader to a new awareness as to what the public really wants when engaging with the nuclear industry.

THE THEORY OF DOMINATING CONCEPTS

“The worst thing that has ever happened is an unquestioned thought.” --- Byron Katie

The theory “Dominating Concepts” was developed by Dr. Edward de Bono (1) and is extended here. This is the theory that --- **Ideas that dominate the general thinking in an industry exert a powerful influence on how people think and act.** Some Dominating Concepts are flawed, and when people think or act out of a flawed premise, this leads to unintended consequences.

For example, at one time it was widely believed that being left-handed is a disadvantage and should be discouraged. This is an example of a Dominating Concept held at the societal level. This idea led many well-meaning people to attempt to force those naturally left-handed to use their right hand. This in turn led to many undesirable consequences (2), for example problems with reading and writing, disturbances in speech, disturbances in concentration, and a difficulty recalling learned material. Fortunately, the social prejudice against left-handedness has changed to the point that society has now largely adopted a new Dominating Concept, “Being left-handed is acceptable.”

A DOMINATING CONCEPT IN THE NUCLEAR INDUSTRY – “THE PUBLIC WANTS SCIENTIFIC EXPLANATIONS”

One current Dominating Concept in the nuclear industry is, “**The public wants scientific explanations.**” To examine this concept, it is useful to ask, “Who is the public? What are the public’s needs and values? How are the nuclear industry’s needs and values different from that of the public?”

To help answer these questions, it helps to refer to the framework of Temperaments. For the past 25 centuries, humankind has attempted to define patterns of human behavior through the theory of Temperaments. Late in the 20th century, Temperaments has been re-defined by David Keirse (3). Temperament is the pattern of needs, values, and behaviors that underlie how people act. It answers the question, “Why do people do what they do?” Temperament theory, with its scientific basis, offers insight into what motivates people.

Temperament theory suggests there are four Temperament types (Figures 1 and 2), and certain types are more predominant than others in the general population.

Figure 1 – The *Guardian* and *Artisan* types together comprise 70 – 80% of the general population

	GUARDIAN	ARTISAN
% of the population	40 – 45%	30 – 35%
They need ...	<ul style="list-style-type: none"> To create order, stability, and control 	<ul style="list-style-type: none"> To engage directly with the physical world
They value ...	<ul style="list-style-type: none"> Logistics Duty and responsibility Rules and policies 	<ul style="list-style-type: none"> Tactics Concrete results Solving problem using direct and practical means

Figure 2 – The *Idealist* and *Rational* types together comprise 20 – 30% of the general population

	IDEALIST	RATIONAL
% of the population	15 – 20%	5 – 10%
They need ...	<ul style="list-style-type: none"> To experience personal growth (for themselves and others) 	<ul style="list-style-type: none"> To expand knowledge and competency
They value ...	<ul style="list-style-type: none"> Diplomacy People Inspiration 	<ul style="list-style-type: none"> Strategy Logic Concepts and theories

Temperament theory suggests that people are often drawn into professions that match their Temperament type needs. It follows, then, that the nuclear industry --- as it fundamentally deals with nuclear science which is based on logical concepts and theories (e.g., nuclear fission and nuclear fusion) --- would attract those of the *Rational* Temperament type. It is the author’s experience, having over the last eighteen years administered type testing within the nuclear industry, that this is the case, and that the *Rational* Temperament type is the most frequent Temperament type found in the nuclear industry rather than the least frequent type (5 – 10%) within the general population.

Next it is useful to further examine side-by-side the differences in needs and values of the *Guardian* and *Artisan* types that make up 70 – 80% of the general population as compared to the *Rational* Temperament type, the type highly represented in the nuclear industry (see Figure 3). This makes it possible to understand why the public may not respond to scientific explanations.

Figure 3 – A further examination of differences between Temperaments

GUARDIAN and ARTISAN (70 – 80% of the population)	RATIONAL (5 – 10% of the population)
Trusts information acquired through the five senses	Trusts information acquired through the sixth sense (intuition)
Trusts straightforward explanations	Values complex explanations
Irritated by what is vague or impractical	Irritated by being asked to do the illogical
Uninterested dealing with theoretical issues	Uninterested dealing with strong emotions

From a Temperament perspective, the general population (the public) is comprised primarily of the *Guardian* and *Artisan* Temperament types receiving information largely from an industry comprised of the *Rational* Temperament type. Typically an industry will communicate in its own “language,” i.e., in ways comfortable to its type. When the nuclear industry does so, the *Guardian* or *Artisan* types often:

- Lose interest or patience in understanding scientific explanations
- Conclude that responses are evasive
- Grow to distrust what (and who) they do not understand.

Obviously, this is not what the nuclear industry intends or desires.

A NEW DOMINATING CONCEPT – “THE PUBLIC WANTS THE NUCLEAR INDUSTRY TO LISTEN IN AN EXPANDED WAY”

As the Dominating Concept “The public wants scientific explanations” has unintended, undesirable consequences, it is useful to replace this with one or more new Dominating Concepts. One such Dominating Concept is, “**The public wants the nuclear industry to listen in an expanded way.**” What is meant by “an expanded way?”

Consider that listening occurs on multiple levels (Figure 4).

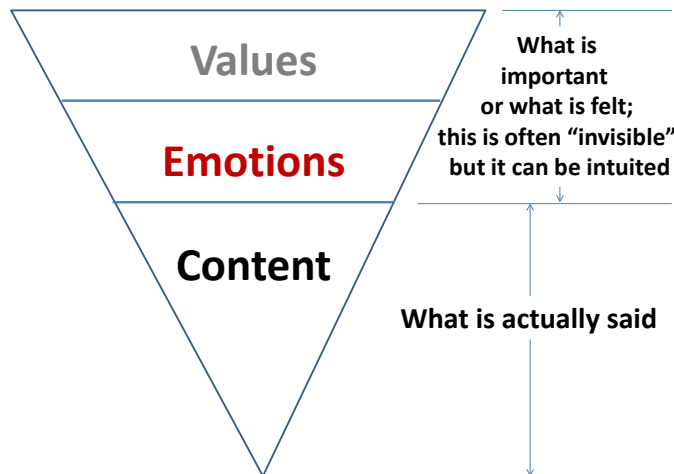


Figure 4 – Listening occurs at multiple levels

Typically, an exchange between the nuclear industry and the public occurs at the level of Content. It is easier to deal with facts and data than it is with emotions and values. In addition, it is easier to deal with what is actually said than with what is often “invisible” and can only be intuited.

However, when the public expresses its concerns to the nuclear industry, the engagement sometimes becomes emotionally charged. If the nuclear industry responds to emotionally-charged situations by giving a scientific explanation, this actually inflames rather than improves the situation.

Dr. Thomas Gordon, an American psychologist and three-time nominee of the Nobel Peace Prize, coined the term *Communication Roadblocks* (4) to describe responses that actually block communications in emotionally-charged situations. Examples of *Communication Roadblocks* in emotionally-charged situations are: using logic, reassurance, diverting, and questioning.

In emotionally-charged situations, the person(s) with the emotion need to know the emotion was heard and accepted for what it is --- an expression of emotions --- not a question or a plea for help. Scientific explanation, questioning, and debate are not, at this point, beneficial. Instead, these become communication roadblocks.

A bridge is needed to shift from an emotionally-charged to a logic-based engagement. This bridge is a response that acknowledges the emotions have been heard and accepted. This does not require *agreement* with the emotions but it does require recognition of them.

The nuclear industry can respond to the public’s emotionally-charged concerns such that it blocks the communication or such that it acknowledges the emotions (Figure 5). Before discussion can occur on the scientific (logical) level, it is necessary to acknowledge the emotions. This is a bridge between the public’s concerns and the scientific explanation.

Figure 5 - The nuclear industry may respond to the public in ways that blocks communication or that acknowledges emotions

SCENARIO	A RESPONSE THAT BLOCKS COMMUNICATION	A RESPONSE THAT ACKNOWLEDGES EMOTIONS (A “BRIDGE” TO A MORE LOGIC-BASED DISCUSSION)
The public expresses concern that the geological repository presents a risk to the quality of their water source.	A LOGICAL REPOSE - “We have analyzed the scientific data, and we find no evidence to indicate that water quality will be at risk.”	We recognize the public is <u>afraid</u> there is a risk to the quality of their water.”
The public expresses concern that the nuclear industry has withheld important and relevant information.	A REASSURING RESPONSE - “The information was not provided earlier, and we reassure the public this was not intentional.”	“We recognize the public is <u>concerned</u> and <u>irritated</u> that important information had not been earlier disclosed.”
The public expresses strong concerns about safety incidents related to the transportation of radioactive materials.	A DIVERTING RESPONSE - “This issue has been addressed elsewhere, and we will now move on to the next topic.”	“The public is concerned about and feels vulnerable to the possibility of transportation-related incidents.”

When the nuclear industry responds to the public’s emotionally-charged concerns using logic, reassurance, and diverting:

- The public feels its interests being ignored or marginalized.
- Feeling marginalized, the public may appeal to the political system.

This is another example of an unintended consequence of the Dominating Concept, “The public wants scientific explanations.”

While acknowledging the public’s emotions will not *solve* a problem, it does meet a psychological need --- the public feels heard and respected.

Acknowledging the public’s emotions also helps the emotions to dissipate. This may not occur immediately, but it may require an ongoing process of acknowledging the concerns as expressed through emotions.

ANOTHER NEW DOMINATING CONCEPT – “THE PUBLICS WANTS ITS VALUES ACKNOWLEDGED AND FACTORED INTO THE DECISION-DEVELOPMENT PROCESS”

A second suggested new Dominating Concept is, “**The public wants its values acknowledged and factored into the decision-development process.**”

Decision-development frequently occurs in what could be considered a backwards manner. First, alternatives are identified, then (maybe) fundamental questions that should form the *basis* for the

alternatives are asked, “What do we hope to accomplish?” “What are the important criteria a solution needs to contain?” or “What are the fundamental values that need to be addressed?”

Decision-development can be more productive if the fundamental criteria or values first are clarified and *then* alternatives that meet these criteria or values are identified.

Behind a Public Concern is a Value Being Expressed

The public also wants the nuclear industry to listen to and understand its values (i.e., the basis for its concerns) and factor these into the decision-development process. The nuclear industry can understand the public’s values by *listening* at the level of values (reference to Figure 4 and Figure 6).

Figure 6 – Behind every public concern is a value being expressed

SCENARIO	PUBLIC’S VALUES
The public expresses concern that the geological repository presents a risk to the quality of their water source.	<ul style="list-style-type: none"> • SAFETY • RELIABILITY
The public expresses concern that the nuclear industry has withheld important and relevant information.	<ul style="list-style-type: none"> • HONESTY • EXPERDIENCY
The public expresses strong concerns about safety incidents related to the transportation of radioactive materials.	<ul style="list-style-type: none"> • SECURITY • LEADERSHIP

Values may be difficult for the public to clearly articulate or for the nuclear industry to accurately identify. The *elicitation process* (5) is a structured dialogue in which a professional trained in elicitation can help the public articulate and even quantify their values (Figure 7).

Figure 7 – Summary Example of Values Elicitation for the scenario “The public expresses concern that the nuclear industry has withheld important and relevant information.”

GENERAL Values	Question to STRUCTURE Values	Public’s Response	Question to QUANTIFY Values	Public’s Response
Honesty and accountability	“What does ‘honesty’ and accountability mean?”	Open sharing of all relevant information	“How might you measure ‘open sharing’?”	Per number of days it takes for the nuclear industry to share the information

ANOTHER NEW DOMINATING CONCEPT – “THE PUBLIC WANTS TO DEVELOP ITS OWN TRUTHS”

“Truth can be tolerated only if you discover it yourself.” --- Fritz Perls

People Can Never Know Things As They Truly Are

In the 18th century, the philosopher Immanuel Kant suggested that people can never know things as they truly are. Rather, they only know things as they are filtered through their own beliefs and experiences. People assume what they see and believe is reality when in actuality it is only their personal reality. Even with the best of intentions, people often discard or fail to recognize information that is foreign to or in contrast with their beliefs.

Members of the public filter information through their belief system. The public will often discard scientific information communicated by the nuclear industry if it is in contrast to what it believes. The public is not apt to change its opinions through reviewing information on a web site or watching a media broadcast. The public is more apt to change its opinions when it actively explores both its own and contrary opinions and the basis underlying those opinions.

The Role of the Nuclear Industry is to Cultivate the Conditions That Help the Public Develop Its Own Truths

The key is to get people from different cultural and educational backgrounds to share their opinions along with the basis of these opinions. This can be done through the use of what's referred to as a *thinking tool* (6), a means through which individuals sit down together --- metaphorically on the same side of the table --- and focus their thinking on a specific task or issue.

The *Group Exploration* method is one such thinking tool. This is a process through which both the nuclear industry and stakeholders sit down together, eye-to-eye, to share with each other their opinions and beliefs inside the conditions of no judgment. This is not an establishment of positions but rather an exploration or illumination of "what is so." This industry/stakeholder group is given a joint task --- to develop an *illustration* that clarifies "what is so" (how things are). The topic of the illustration is specific. It could, for example, be to develop a joint illustration of:

- The roles and responsibilities in the process of siting a geological repository, or
- How the nuclear industry obtains (learns of) the public's views, or
- Processes the nuclear industry uses to distribute information to the public.

The form of the illustration is whatever the group decides. It might be an organizational chart, a flow diagram, or a graphic illustration. The discussion is self-directed, i.e., it is led by one or more persons internal to the group.

The *Group Exploration* method, because of its informal and collaborative nature:

- Provides the nuclear industry and the public, in a low-confrontational situation, to each illuminate what it thinks and (more importantly) *why* it thinks that way (i.e., the basis behind each other's concerns)
- Allows members of the nuclear industry and the public to better know one another personally,
- Provides an opportunity for the public to "develop its own truths" through a more educated, informed, and direct experience with the nuclear industry.

ANOTHER NEW DOMINATING CONCEPT – "THE PUBLIC WANTS DISCUSSIONS TO BE RESPECTFUL AND CONSTRUCTIVE"

In some instances, members of the public are never satisfied with responses given by the nuclear industry. Some individuals simply don't know how to engage with others in a useful, productive way, and their

tactics are similar to those of a bully. They may argue. They may attempt to create chaos. They may present their cause as though it is on behalf of others rather than their individual cause.

The general public does not want to be held hostage by such individuals, and they do not want to partake in engagements with the nuclear industry when people or groups such as this take up most of the “air time.” Most of the public wants an orderly, respectful, constructive and calm discussion, not a viscious debate.

In some such instances, at a fundamental level what the individual(s) or group needs is to be relevant, to be useful, and they are unaware or unwilling to do what it takes to be effective. They may not have developed tact or the personal skills needed to work with others. And they may be immune to the needs of others.

Such individuals often use the tool of argument to attempt to gain relevancy. The nuclear industry must be careful to not fall into the trap of returning argument with argument. Rather, the nuclear industry can:

- Be calm and refrain from argument
- Listen in an expanded way (for emotions, values)
- Acknowledge the individual’s or the group’s values and help these be quantified so they can be factored into decision-development
- Cultivate the conditions to help the individuals or group to develop their own educated truths.

In other words, the nuclear industry use the three suggested new Dominating Concepts to approach such individuals and groups in a new way. A key is to not give individuals or groups such as this an undue amount of attention for this then detracts from attention given to those who would like to engage with the nuclear industry in a constructive, learning manner.

CONCLUSION

This paper began by examining the Dominating Concept, “The public wants scientific explanations.” Of course, the public **does** want scientific explanations. However, the public wants more than scientific explanations. It wants the nuclear industry to:

- Listen in an expanded way,
- Acknowledge and factor the public’s values into the decision-development process,
- Recognize that the public wants to develop its own truths, and
- Recognize that the public wants discussions to be respectful and constructive.

These Dominating Concepts, if adopted, will help the nuclear industry evolve its public engagement practices in the direction of greater mutual respect and rapport.

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