

Human Design Context: Identity, Values and Ethics

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Tag Line:

Supercharging the design process through value delivery for customers and employees.

Preamble:

Our world is bounded by facts. If we are designing a design method which must operate in this world, acknowledging these facts can help us to maximize the design method's effectiveness. What are some facts which are of particular importance to the process of design? And what defines the 'effectiveness' of a design process? The fundamental *factual context*, the nature of the universe in which we design, is the subject of study of the philosophical discipline of *metaphysics*. The term *effectiveness* implies a value judgment: 'Effective to whom; and for what purpose?' Value judgments are the subject of the philosophical disciplines of *morality* and *ethics*. In this essay I will apply the metaphysical, ethical, and moral conclusions of the philosophy of Objectivism to the process of design – and greatly improve my ability to increase value generation thereby.

Design is a process enacted *by* and *for* humans – by an employee for a customer. The outcome of the design process is a product which the customer finds valuable. Leveraging the philosophical fields of metaphysics and morality, I aim to create a list of criteria which can help a designer determine whether a design proposal is ethical (promotes life). This goal is loosely related to the traditional idea of design ethics: ensuring product design is done in an "ethical manner," while satisfying a customer's wishes. However, I wish to go one step further in exploring the ethical efficacy (defined as: promotes life) of my design method. Employees are the prime movers in the design process... I wish to develop a form of design which also maximizes value for, and thus motivates, the employee involved in the design process. Reading Lucy Baker's essay for A2 was what prompted me to explicitly deal with the issue of motivation in design.⁷

In the midst of writing this essay, I stumbled across a website containing a number of quotes by Thomas A. Edison. Many of them bear out the conclusions I was coming to in this essay. As one of the most renowned designers of all time, I think it's

also appropriate to leverage selected pearls of Edison's wisdom as well.

The Metaphysics of Opportunity Cost

There are three metaphysical axioms inherent to every bit of knowledge we claim:

- **Existence.** "Existence exists" – Ayn Rand. Metaphysically, this is simply acknowledging that there *is* something, as opposed to nothing. Existence is axiomatic. "This axiom must be the foundation of everything else. Before one can consider any other issue, before one can ask what things there are or what problems men face in learning about them, before one can discuss what one knows or how one knows it – first, there must *be* something, and one must grasp that there is. If not, there is nothing to consider or to know (p.5)."¹
- **Consciousness.** "Grasping the first axiom of philosophy, existence, implies a second axiom: that you exist possessing *consciousness*, consciousness being the faculty of perceiving that which exists. Consciousness is not inherent in the fact of existence as such; a world without conscious organisms is possible. But consciousness *is* inherent in *your grasp* of existence. Inherent in saying "*There is something* – of which I am aware" is: "There is something – *of which I am aware* (p. 5)."¹
- **Identity.** This is the law of identity, attributed to Aristotle. "A third and final basic axiom is implicit in the first two. It is the law of identity: to be is to be something, to have a nature, to possess *identity*. A thing is itself; or, in the traditional formula, A is A. The "identity" of an existent means that which it is, the sum of its attributes or characteristics (p. 6)."¹

The axiomatic law of identity has special relevance to this essay. It has a direct relation to a fundamental principle in economics, and also has special implications with respect to man's nature. First: economics. The law of identity states that entities are something specific. . . Entities are neither nothing (axiom of existence), nor are they infinite – they are bound and delimited by specific characteristics which define what the entity is. The fact that we do not live in a world of infinities (translation: Garden of Eden) is acknowledged in the discipline of economics. This aspect of the axiom of identity is mirrored in economics by the concept of *opportunity cost*.

Because we live in a world of *finite* entities (resources), we are presented with the fact that we must make *choices*. 'Opportunity cost' defines 'the value of the next best alternative foregone as the result of making a decision.'⁵ This means that an individual makes decisions between alternative courses of action based on *how strongly the person values the alternative choices relative to each other*. The person selects the course of action which he or she values the most. Individuals will find that some choices are harder to make (large opportunity cost) when the alternatives carry seemingly unperceivable differences of value relative to each other. Nevertheless, we are faced with a world of finite resources and the necessity of making choices in the context of *what we choose to value*:

The Metaphysics of Life

I said earlier that the axiom of identity has special relevancy to the identity of man. Now I will elucidate why that relationship is so important. If “to be is to be something” then man himself is something *specific*. Man has a specific identity and the characteristics which define his nature are facts. One aspect of man’s identity is the fact that he possesses the characteristic of *life*. What is life?

“The existence of inanimate matter is unconditional, the existence of life is not: it depends on a specific course of action. Matter is indestructible, it changes its forms, but it cannot cease to exist. It is only a living organism that faces a constant alternative: the issue of life or death. Life is a process of self-sustaining and self-generated action. If an organism fails in that action, it dies; its chemical elements remain, but its life goes out of existence. (p. 191)”¹

Inanimate objects may change forms but they will still exist in some form. It is life which enables the fundamental alternative of existence or nonexistence – life or death. Man possesses life and the alternative of life or death is *crucially* important for morality and ethics. A person must consciously adopt a course of action which promotes his life—but only if he *chooses* to live; life is conditional on that choice and enacting life-promoting choices:

It is critical to note that “life is a process of self-sustaining and self-generated action.” How does a living creature, of any sort, sustain its life through its actions? **If** it is committed to living, an organism sustains its life by pursuing the **values** which promote its life.

“To an indestructible entity, no object can be a value. Only an entity capable of being destroyed and able to prevent it has a need, an interest (if the entity is conscious), a reason to act. The reason is precisely: to prevent its destruction, i.e., to remain in the realm of reality. It is this ultimate goal that makes all other goals possible. Goal-directed entities do not exist in order to pursue values. **They pursue values in order to exist.** (p. 211)”¹ [emphasis mine]

and,

“Only the alternative of life vs. death creates the context for value-oriented action, and it does so only if the entity’s end is to preserve its life. By the very nature of “value,” therefore, *any code of values must hold life as the ultimate value.* All of the Objectivist ethics and politics rests on this principle. (p. 212)”¹

The relationship between metaphysics, morality, ethics, and design can now be made clear. The moral purpose of design is, happily, nothing less than what typically determines our success as designers:

Creating products for our customers which improve their lives.

A product which provides a *value* which improves the life of a customer is the *ethical standard of design* (Appendix A).

The Necessity of Ethical Design in the World of 2030

Most people do not choose to live as hermits, separate from society. There are two values, dear to most people, which prompts them to choose sociability over solitude. Critically, with regard to this class, I believe these two values will still be as important in 2030 as they are today. The first value is that of *human interaction*. Friendships, family, love, and the ability to learn from each other will still be as valuable to people in 2030 as they are today – and all of them are solely enabled by interaction with other people. The second value which can be enabled by living in society is *a far superior standard of living*. People living in societies which uphold the *free exchange of goods* enjoy more comfortable lifestyles than people living in the wild, who have to fend for themselves. This improved quality of life is due to the free exchange of goods and ‘the division of labor.’

In short: in 2030, there will still be enormous benefits to interacting with other people. I don’t see any amount of technological advancement overcoming the desire which most people have for social interaction and an improved standard of living – which life in society enables. As designers, we can create products which enable the values of social interaction and improved living standards.

I, and I suspect all of my classmates, assume that that critical requirement of an improved standard of living will still be occurring in the world of 2030: free exchange of goods. It is exactly this phrase which lends urgency to Friedman’s Globalization 3.0: where there are more participants, *more competition for providing value* is prevalent...

We predict that the world of 2030 will be much flatter, in that distance will be a far small barrier to competition... Information will be more readily transferable to those who can more effectively add value to it. Communication will more successfully take place across larger distances. The core message of Globalization 3.0 is: “The world of 2030 will contain a lot more players – it behooves you to think forward and sharpen the skills which will make you more competitive!” How do we ensure that our design process will be effective in 2030, given all these facts? The train of logic is as follows:

- Living in society improves our quality of life because there are *more values (products) available with which to improve our lives*.
- People’s desire for a better standard of living is infinite, but resources are finite (opportunity cost!): *people choose to buy those things which they believe will most effectively improve their lives*.
- In the world of 2030, *more* people will be able to effectively compete to provide value to customers.
- A design method which explicitly recognizes the goal of *providing life-improving values to customers* will generate more competitive products.
- Therefore: *a design process is useless if it does not generate customer value, and one which explicitly recognizes this goal will be more effective*.

Every point here reinforces the ethical goal of design, stated earlier: to create products for our customers which improve their lives. In other words:

“Anything that won’t sell, I don’t want to invent. Its sale is proof of utility, and utility is success.” – Thomas A. Edison

Objective Design Ethics – The Customer

Given that we have defined the ethical goal of design as “Creating products for our customer which improve their lives,” how do we best develop products which achieve this end? To my mind, the following general *list of criteria* can be used as a basis for interpreting a design’s value to human life (and its potential for success!). There is a good chance that there are other criteria which did not occur to me; this is just my initial proposal. However, designs which provide the following legitimate, life-promoting values have a basis for justification in a rational (life-promoting) morality:

- **Health** – products which extend the life or address ailments certainly are of objective value to human life. Design of cancer medicines or disease vaccines illustrate “design for health.”
- **Safety** – products which help to minimize injury or harm to people are of clear benefit to people. Designing machinery or products which are safe to operate and use is an obvious example of this.
- **Comfort** – designs which remove burdensome, difficult, or unproductive aspects or tasks from life certainly help to improve it. Design of ergonomic office furniture would be an example of this.
- **Enjoyment** – products which provide aesthetic or recreational satisfaction provide the legitimate value of “recreational enjoyment” for people. Designing vacation packages for people, as a travel agent might do, is an example of this.
- **Utility** – products which save people time and allow them to engage in activities they find more useful are of objective value to people. An example would be communication technology, which allows people to communicate faster and more efficiently than older, more time consuming technology.
- **Education** – the ultimate tool of productivity, which allows us to increase our well-being, is our minds. Products which sharpen that tool aid the advancement of mankind. “Pedagogical design” is an example of this. There is much that Objectivism has to say about epistemology which ties into this. Google is essentially a cross between education and convenience; it greatly eases access to information.
- **Justice** – Products which are used for the defense of the innocent protect the lives of those who, ethically, deserve to be protected. Examples include design of government systems, laws, and weapons which will be used to defend the innocent.

- **Reduced Cost** – Obviously, products which provide any of these values at lower cost will be more highly valued by customers (it lowers their opportunity costs!).

Design solutions from many professions can provide these values and can help to promote man's life—products which provide these values will more likely succeed in a market because they appeal to people's values (if their goal is to make their lives better). By producing products which produce the values listed above, people's standard of living will be increased. Products which provide these values will command market share because most people do pursue values which help advance their lives.

Objective design ethics can be a powerful tool for a designer working on the design of any type of system. By keeping at the forefront of their minds the idea that “providing values which improve the lives of their customers” is the core goal of design, designers will be fruitfully rewarded for identifying inefficiencies and places for improvement to occur in the lives of their customers. It is essentially performing a gap analysis, after recognizing that there is a need that could be satisfied in someone's life: “Here's where we are today: one of these value criteria is lacking in our customer's life. What can we do to improve our customer's life through that value?” Tommy agrees:

“*Discontent is the first necessity of progress.*” – Thomas A. Edison

A customer judges the value of a product according to his own values based on essentially TWO factors about the product:

- **The Cost:** the *cost* at which the product is being provided.
- **The Benefit:** the *degree* to which the customer's desire is satisfied.

This is cost-benefit analysis! Every customer, when judging whether to buy a product, asks themselves: “Is the degree of satisfaction which this product provides worth the cost?”

The answer to this question is HIGHLY contextual. Individuals have widely varying personal preferences and values. To a billionaire, a million dollar super-car may be worth purchasing. But a middle-class individual would likely not find this a worthy investment, and a poverty-stricken farmer in rural China would likely find this product beyond useless. Similarly, a piece of reliable farm equipment would be inversely valuable to these three different people.

The individual, personal, contextual nature of values is a fact that is especially relevant for *new product design*—when an outside customer isn't dictating a task and price point... It's the crucial discipline of marketing which identifies what group of people a newly proposed product should be targeted to. This decision, about what market to target, can play a *very* significant role in the design of the product itself—what features to incorporate? Is the concept itself targeted towards a certain group of people, or can price and features be modified to appeal to a broader number of people? Etc... Marketing's role is essentially to determine whether there is a sufficient number of people who have similar values (opinions on cost/benefit analysis) to justify the proposed product (this relates to mass customization—a method which attempts to

provide more product flexibility, *in order to successfully appeal to the widely varying sets of values of **more** individuals.*).

A crucial ethical question arises for designers which can be concretized as: “What’s the difference between selling cigarettes and nuclear missiles?” There is an enormous ethical difference, by the standards of Objectivism, and that is the critical distinction of *the initiation of force*. Without getting too deeply into the Objectivist position for the purpose of government:

- Man’s reasoning mind is the fundamental tool which he uses to support his life. Every life improving product we enjoy today is the result of thought, and the freedom to act on that thought. Man must be permitted to use his mind, or he cannot act to further his life, and his life will suffer.
- The initiation of force prevents men from thinking and acting freely.
- Therefore: the rational purpose of government is: protection of individual rights, in order to bar the use of force between people. Without these rights, man cannot survive, let alone thrive.

So, to draw the distinction between cigarettes and nuclear weapons: one of them clearly can be used to harm others. An individual cannot ethically be sold a nuclear weapon, not even on the basis of defense of his own life, because the purpose of a nuclear weapon is indiscriminate, massive destruction. Personal firearms CAN be used in personal defense of life, which makes them safe and ethical in the hands of those who do not wield them against others. However, design and manufacture of a nuclear weapon for a government which protects its citizens according to ethical laws, would be ethically justifiable. On the other hand: cigarettes provide a value to some people, and these people assume the risks associated with them. Their use does not commonly infringe on other people’s rights, and therefore people must be free to pursue this value. Objectivism acknowledges the reality of this potentially bad choice, because it acknowledges that life is conditional, as mentioned earlier. “*If you do not want to get lung cancer, then you should avoid smoking.*”

Personally, I cannot see myself working for a cigarette manufacturer, even though there are many people who regard cigarettes as a value. It’s evident that smoking is bad for your health, and for that reason, working for a cigarette manufacturer would violate my values (I value personal fitness). This example emphasizes the importance of aligning the values of employees involved in the design process with the work they are doing. An employee working on a project which does not stimulate his values is a less productive employee.

Objective Design Ethics – The Employee

“I find my greatest pleasure, and so my reward, in the work that precedes what the world calls success.” -- Thomas A. Edison

While this is a great sentiment, it is important to realize that doing work simply because we enjoy it isn’t sustainable—unless the work does produce “success,” i.e. value

that people will pay for. That is why I set out a general list of core values which most customers find valuable in the previous section. That section dealt with delivering *customer* value. In completing A2 and reading Lucy Baker's essay, a critical point jumped out at me: "Designers and managers forget that the primary factor in how efficient they or their employees are is motivation. If the designer is not working, the design process will not be efficient no matter how structured or systematic it is. (p. 40)"⁷

Mr. Edison emphasizes how great it is to do work you enjoy and Lucy Baker emphasized that work isn't going to be done unless the employee is stimulated to participate in the first place. Thus, employee/designer motivation is critical in itself, even when thinking about generating customer value. How can value be generated for a customer unless someone is motivated to do the work which generates that value? And for the purposes of this essay, how can a design method be structured so that design effectiveness / employee happiness is maximized? Is it any surprise that one of the most prolific designers of all time said the following?

"I never did a day's work in my life. It was all fun." – Thomas A. Edison

If we have tools to manage time, direct our attention, and promote the generation of concepts, why don't we have tools, methods, and concepts which ensure that the design process interfaces well with the most important entities in the design process: the designers?

The purpose of design is to improve the lives of customers by creating products which appeal to their values. Designers are no different—in that they have values too. Just like customers choosing the product which best satisfies their desires, so employees will be most inclined and interested in doing work which most appeals to their values. I see three key components to the design/employee interface:

- **Training/Talents:** does the employee have, or possess the willingness to learn, the skills which are crucial to this design project? This is the minimum eligibility requirement for participation in a project.
- **Design Ethics:** does the designer have any moral qualms with the design project under consideration (ex: I do not want to create cigarettes)?
- **Values:** does the work provide the values which motivate the employee? Salary is the most commonly thought of value which employees expect for participating in the process. But in the ideal and most productive case, they get *enjoyment* from their work as well.

I believe there is a definite hierarchy of employee motivation, and the level of an individual's motivation to perform work is directly related to the *degree of satisfaction of the employee's values*. However, before the satisfaction of values can begin through work on the project, there is a base "price of admission" to participate in the project and that is *having the skills or experience which can help the project* (or possessing the ability and motivation to learn them). This is the foundation for project success. The first value which must be satisfied for an employee to be prompted to participate in the project is agreement that the project is ethically justified. If the designer does not believe in the

rightness of the project goal, it will undercut all his motivation to work on the project (Imagine placing Gandhi on the design team of a weapon of mass destruction; I suspect he would be quite recalcitrant.). The next value which the design process can provide to motivate the employee is fiscal livelihood. “Salary and benefits” naturally flows from generating value for customers. The final and most critical value which can “supercharge” an employee’s contribution to the project, is motivation through personal interest in the work itself. This is strictly a function of the employee’s personality—what work he enjoys / values—and if his tasks on the project align with what he enjoys. I believe this hierarchy can be captured by the concept of “The Productivity Pyramid” shown in Fig. 1 below.

Opportunity costs exist in this hierarchy as well. Commonly, this means that some employees will sacrifice either job satisfaction or ethics to get more money. *But with respect to motivation and work productivity*, both of these options marginalize the ability to successfully contribute to the project... I believe that sacrificing ethics for money undercuts employee motivation no less than sacrificing job satisfaction itself. These tradeoffs between ethics and salary and ethics and job satisfaction can be included in the “Productivity Pyramid” as “Zones of Opportunity Cost” in Fig. 1.

Productivity Pyramid

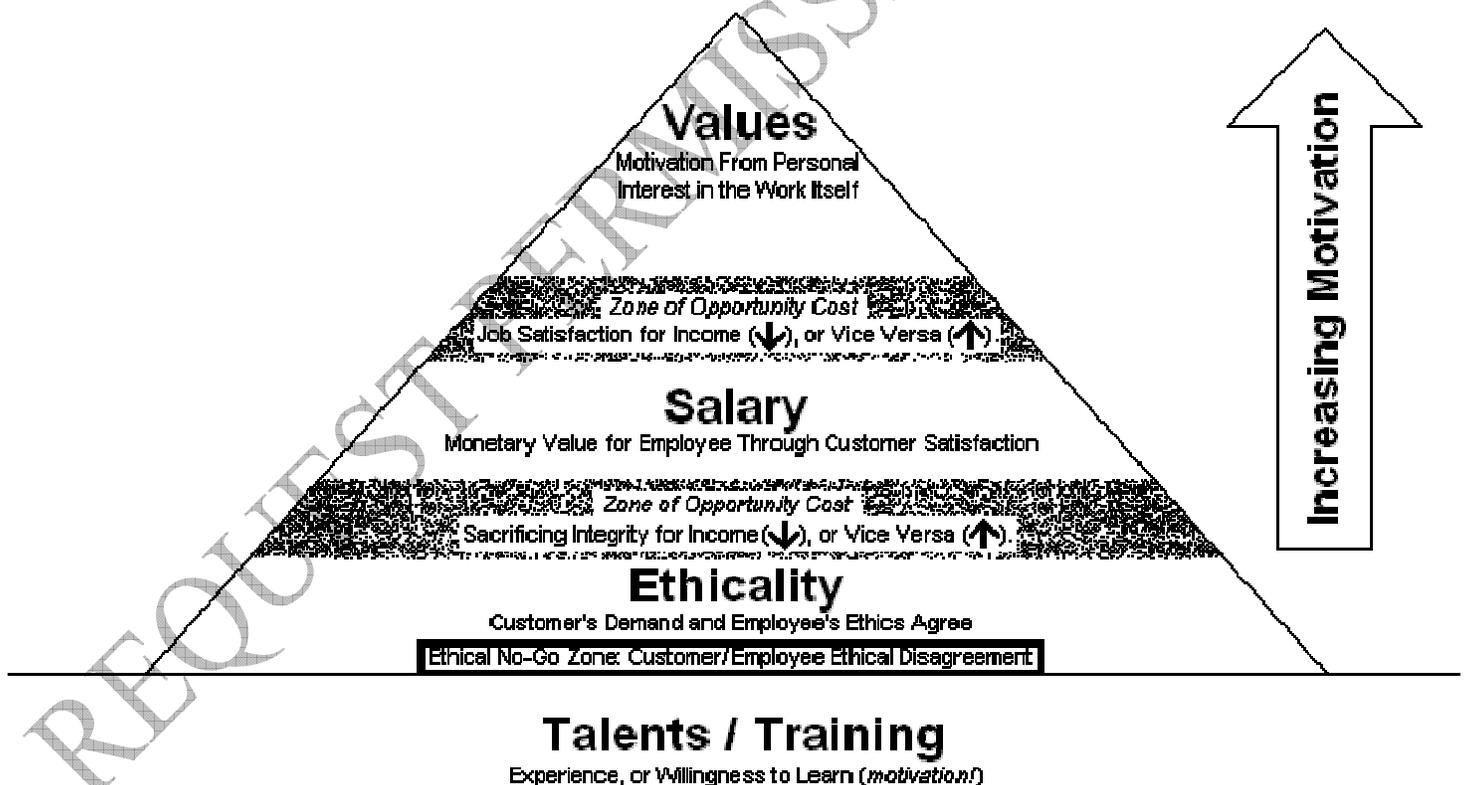


Fig. 1. The “Productivity Pyramid.” Shows the hierarchy of values which can serve to motivate an employee for a specific job being considered.

I believe this is a useful conceptual hierarchy for determining the success of a project—it emphasizes the critical role that the employee’s passion for the work can play in a successful project. While this is a useful concept, I believe it would be very difficult to *quantify* these levels numerically. An individual’s evaluation of a specific project (implicitly using this hierarchy) is a complex cost/benefit analysis which is only dependant on their personal values. The Pyramid is a useful abstract concept, but not a rigorous mathematical tool.

That said, I believe there is enormous potential for increased productivity in finding accurate ways to help people assess what their values actually are. Many people do not consider the nature of values, explicitly identify them, or recognize the important role they play in an extremely fulfilling and successful career. If there were tools which could accurately help people to identify the work that they really love, lives would benefit not only from job satisfaction, but by an enormous surge in economic output.

In the World of 2030, we may see advanced developments of concepts, tools, and tests which help people to determine what career path they should pursue, based on their values. I believe this kind of ‘industry’ is in its infancy. I think there is a lot of room for improvement in the ‘tools’ which we currently attempt to align values with work:

- **“Personality Tests”**: These ask you a series of questions and your answers determine what type of ‘personality’ you possess—and thus what type of career you might be interested in... Broadly, they usually define ‘personality’ as whether you are strongly analytical/rational, or creative/subjective. I do not think there is a dichotomy between the two, and a creative person who enjoys an analytical job could be better at it than an analytical person who is apathetic about the job that is supposedly “right for him.”

Pros:

1. Provides a relative quantification of how one “thinks.”
2. Can illuminate talents which might make you more **capable** at a job...

Cons:

1. ... But does not indicate if you would **enjoy** this kind of work (values).
2. Does not reflect the fact that a “creative” person could enjoy and be better at an “analytical” job if the creative person enjoys it more.

- **“Life Coaches” and Self-Help Books**: there is a plethora of writing and a number of people who provide advisement on helping people to live passionately.

Pros:

1. Self-help books are inexpensive
2. Learning by tutoring, from a Life-Coach, may be preferred over reading.

Cons:

1. Life-Coaches are expensive.
 2. I suspect there are large differences in the methods proposed by books and Coaches. The art of guiding people in finding what they value is just that: an art, and nowhere near a science yet. Perhaps, with more study by psychologists and philosophers, it could become an actual discipline.
- **Human Resource Employees:** most companies find it valuable to employ people who possess training in recruiting and hiring. I am not too aware of what methodology these employees are taught in college, but I investigated “H.R.”⁸, “H.R. Management”⁹, and “Recruitment”¹⁰ on Wikipedia.

Pros:

1. A staff dedicated to the important task of recruiting the right people for the job seems to pay heed to the importance of “The Human” in the design process.

Cons:

1. Based on the subjects covered in (8, 9, 10), it does not appear that explicit recognition of job interest / motivation plays a critical role in H.R./Recruitment efforts. It is assumed that the person with the “skills” is best qualified for the job (which is simply operating at the base of The Productivity Pyramid. Does not address matching employee ethics and explicit interest in the job itself.).
 2. Recruiters assume an employee will be motivated to do the job well, based on the applicant’s interest in the job. But this does not mean the employee is interested in the job out of interest in the work itself (which would result in maximum productivity for the company and happiness for the candidate). The employee may just be interested in the paycheck. H.R. *should* screen for motivated interest in the job.
- **“Headhunters”**¹⁰: these are typically individuals or organizations with a lot of contacts who have a depth of experience in a certain area of specialty, typically executive level management or highly specific technical trades. They charge high retainer fees for finding talent to fill important, high-paying roles. The existence of this type of job illustrates very strongly how crucial it is to have the right person for the job, in order for an organization to be successful. I suspect that headhunters implicitly or explicitly recognize the importance of what’s represented in The Productivity Pyramid—employees which can turn a business around not only have technical talent, but love doing the work, too.

Pros:

1. Most likely implicitly recognize that the “right person for the job” must love what he or she is doing, and will steer clear of those without

an interest.

Cons:

1. Expensive.
2. Not available for all industries.
3. Nowhere near automated; essentially a glorified rolodex of specialists.

A tragedy of the employee-side value identification “tools” listed above—Personality Tests, Life Coaches, and Self-Help books—is that they are passive determiners of value. They largely require an individual to recognize that a “great job” is the result of loving the work itself, and that requires identifying what the individual values. Everyone would benefit from a job they love, but I imagine many people are either apathetic about finding one or unaware of how great a wonderful job can be for them. These tools REQUIRE that people be aware of this importance and seek out these tools to assist them. The guidance which these tools provide may be hit or miss, too. As mentioned, I think the art of identifying an individual’s values is far from developed.

From my brief search of Wikipedia, it appears that the employer-side value identification institutions—Human Resources, Headhunters—do not give a lot of explicit emphasis to the importance of employee interest in the work. Employee motivation is kind of a working assumption of theirs, and I’m not too sure they recognize explicitly during recruiting how important it is to identify whether the potential employee’s values are consistent with the work to be done in the position he/she has applied for. In my personal experience, corporations are employing “behavioral based interviews” (tell me a time when you did “X”) after your resume passes the “does he have the requisite basic skills for the position?” test. This may tell the H.R. people how you handled past situations (or how well you can practice reciting “tell me a time when you” stories prior to the interview), but it does not tell them whether you are going to love the job. Some kind of test, or some kind of explicit on the job trial-period during which candidates can be screened for which likes the job best, would be far more appropriate to determine this.

Hopefully, the disciplines of H.R. and headhunting are just the precursor of an incredibly important new industry which is now just in its infancy. It is my sincere hope that in the World of 2030, “Finding a Job You Love” will be just one more service which companies sell to people interested in it.

Synthesis & Relationship of Customer, Designer, and Objective Values

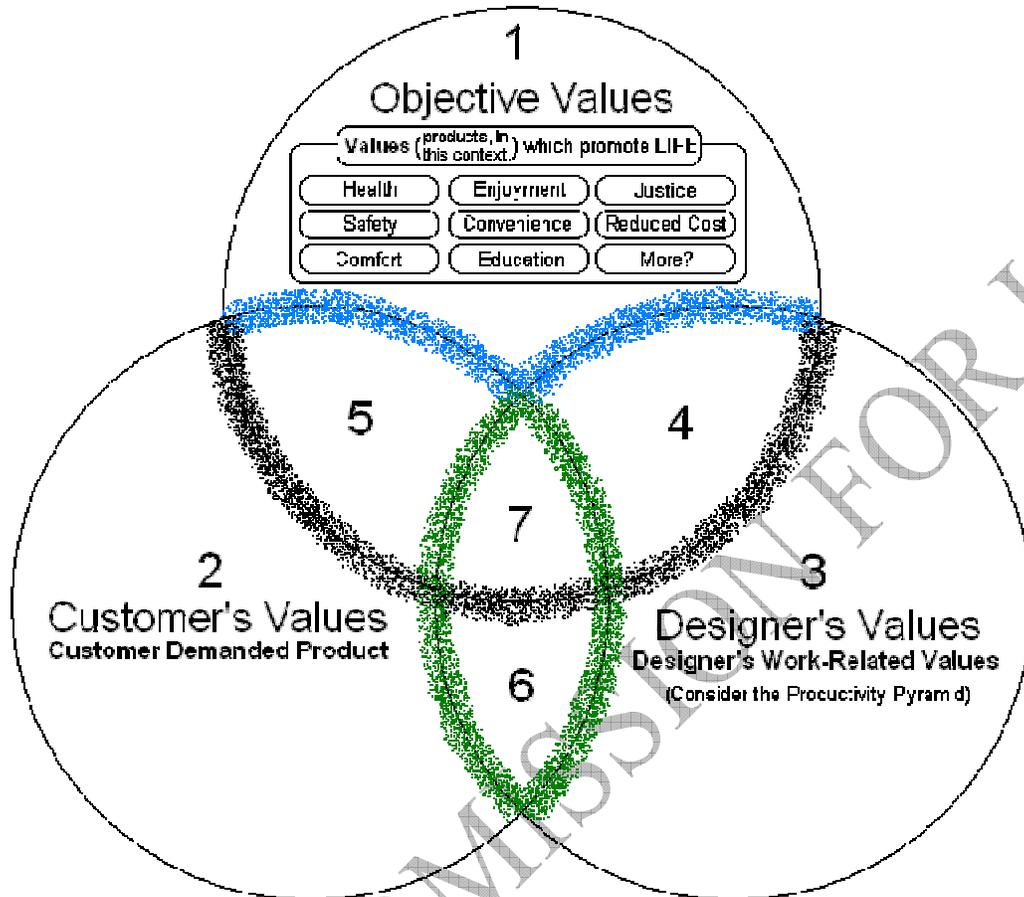
Suppose we have a *specific* product in mind. This proposed product will have some value to a potential customer. The work and payment required to create this product will have some level of value to a designer. And the product itself may or may not fall into the definition of being a “life-promoting value.” In other words, a specific product may or may not fall within these three “realms of values,” and there is a unique interrelationship between the three sets of values. The interrelationship of these three

value domains is shown in Figure 2: the “Venn Diagram of Values.” **A specific product will fall somewhere within this diagram for a certain customer and designer.** Ideally, in region 7—where the customer’s life is promoted and the designer is satisfied with the work/payment required to produce the product.

A key point to getting value out of this *Venn Diagram of Values* is ascertaining what region a proposed product lies in, and then understanding *the crux of the problem* which is preventing the product’s presence in region 7. For example, products in region 1 promote life, but are unfeasible given current costs and known technology. Identifying the crux of what is making the product “too expensive” (Materials? Costs too much time? Don’t have the knowledge?) can help the designer to create the solution which makes the product a reality—through innovative, cost-cutting ideas or successful research. Profit potential also lies in moving values from region 6 into region 7; if a value which a customer chooses to purchase harms his life, but a design can be created which provides the value without harm to the customer, the customer will likely buy it. For example: a cigarette which gives no increase in the likelihood of lung cancer.

An assumption of this diagram is that fraud and force are not employed. First, a customer cannot force a designer to supply him with a product from region 2 or 5, which the designer does not wish to supply. Second, fraud is assumed to not occur: a designer is not deceptively selling a harmful product to a customer who believes it lies in region 6 or 7, when it would actually lie in region 3, if the customer were aware of what the designer is not telling him. The ethical boundaries are maintained, in that both parties do not force each other to adopt each other’s morals through deception or force.

Imperfect knowledge is also acknowledged in this diagram. The vague inner-diagram boundaries are meant to convey this. The vague border of the “Objective Values” region shows that humans can be unsure whether a product promotes life. For example, our knowledge of whether a *physical* product promotes life is usually limited by scientific knowledge of the constituent’s effects on the human body. Also, because we have limited knowledge, products can quickly move from one region to another. An example is the Ford Pinto, which went from being a bargain car which most customers would have described as being in region 7, to a “life-harming design” in region 3—after it became known that its gas tank exploded when the car was rear-ended.



| | |
|---|---|
| 1 | "Infeasible Objective Values": Would measurably improve life, but are infeasible (too expensive or lack technology) Ex: supersonic intercontinental travel for \$500/seat |
| 2 | "Life-Harming Customer Demand": Designer will not supply, and harms life in some way. Ex: cocaine addict demanding more of the drug; chemist refuses to supply it. |
| 3 | "Life-Harming Design": Designer supplies product, but it harms life and customer refuses to purchase. Ex: typical example is a design error, i.e. exploding Ford Pinto (fraud is not considered in this tool). |
| 4 | "Customer Dissatisfaction": Design promotes life, but customer believes product is not valuable, or price too high. Ex: many failed businesses fall into this category; they did not successfully identify and satisfy customer's values |
| 5 | "Supplier Discontent": Customer life promoted but payment, nature of work, or time required dissatisfies designer Ex: jobs considered to be too "difficult" or "unrewarding" by the designer. |
| 6 | "If you want to live...": Evidence product could harm customer, but designer & customer agree it's a value to them. Ex: customer chooses to pursue heavy cigarette smoking or drinking alcohol, both of which can be harmful to life |
| 7 | "Feasible Life Promoting Products": Customer life improved through designer work (which he hopefully enjoys doing). Ex: the majority of successful products fall in this area. |
|  | Region of Debate over "What Promotes Life": due to insufficient knowledge about the product's effects. |
|  | Boundary of Opportunity Cost: product becoming too expensive... How much expense is customer/designer willing to trade for more comfort/safety/etc.? |
|  | Boundary of Moral Agreement: customer/designer values beginning to disagree... Cost / payment disagreeable, product not satisfying customer wishes, or work not stimulating or ethical to designer. |

Fig. 2. The Venn Diagram of Values.

Summary: Integration of Tools into the Design Process of ME 6101

In this essay, I have proposed several lists and tools which can help to satisfy the values held by customers through design and increase design productivity itself through the satisfaction of the values of the designer himself. These included:

- A proposed **list of objective values** which, if kept in mind, can help to improve the life of your customer and thus increase appeal and competitiveness of the product:
 1. Health
 2. Safety
 3. Comfort
 4. Enjoyment
 5. Convenience
 6. Education
 7. Justice
 8. Reduced Cost
- Proposed **The Productivity Pyramid** which acknowledges the importance of job satisfaction in achieving the highest level of productivity for a given individual.
- Identified the **current tools and institutions which aim to align employee values with work**, for a satisfying work experience:
 1. Personality Tests
 2. Life Coaches
 3. Self-Help Books
 4. Human Resource Departments
 5. Headhunters
- Proposed the **Venn Diagram of Values**, which demonstrate the different regions which potential products can fall into.

All of these tools and lists deal with “The People” in design. I will incorporate these concepts into my expanded P+B process, which included the Time Management, Attention Directing, and 7 M& P tools as part of “The Process” of design. Fig. 3 shows my expanded P+B process, before adding the tools and lists from this essay. Fig. 4 shows the process with the concepts from this essay included.

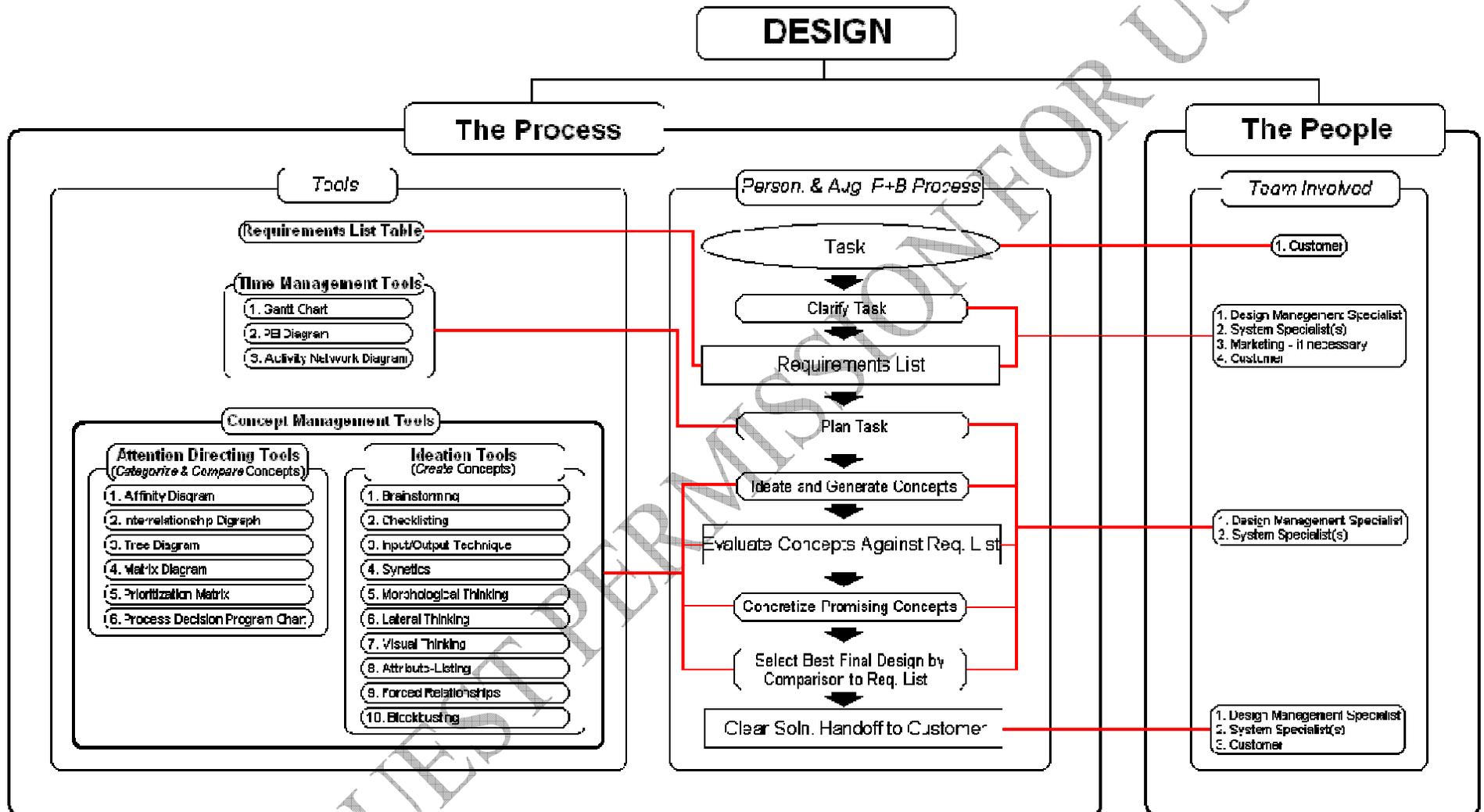


Fig. 3. The original expanded personalized P+B design process WITHOUT the tools from this essay.

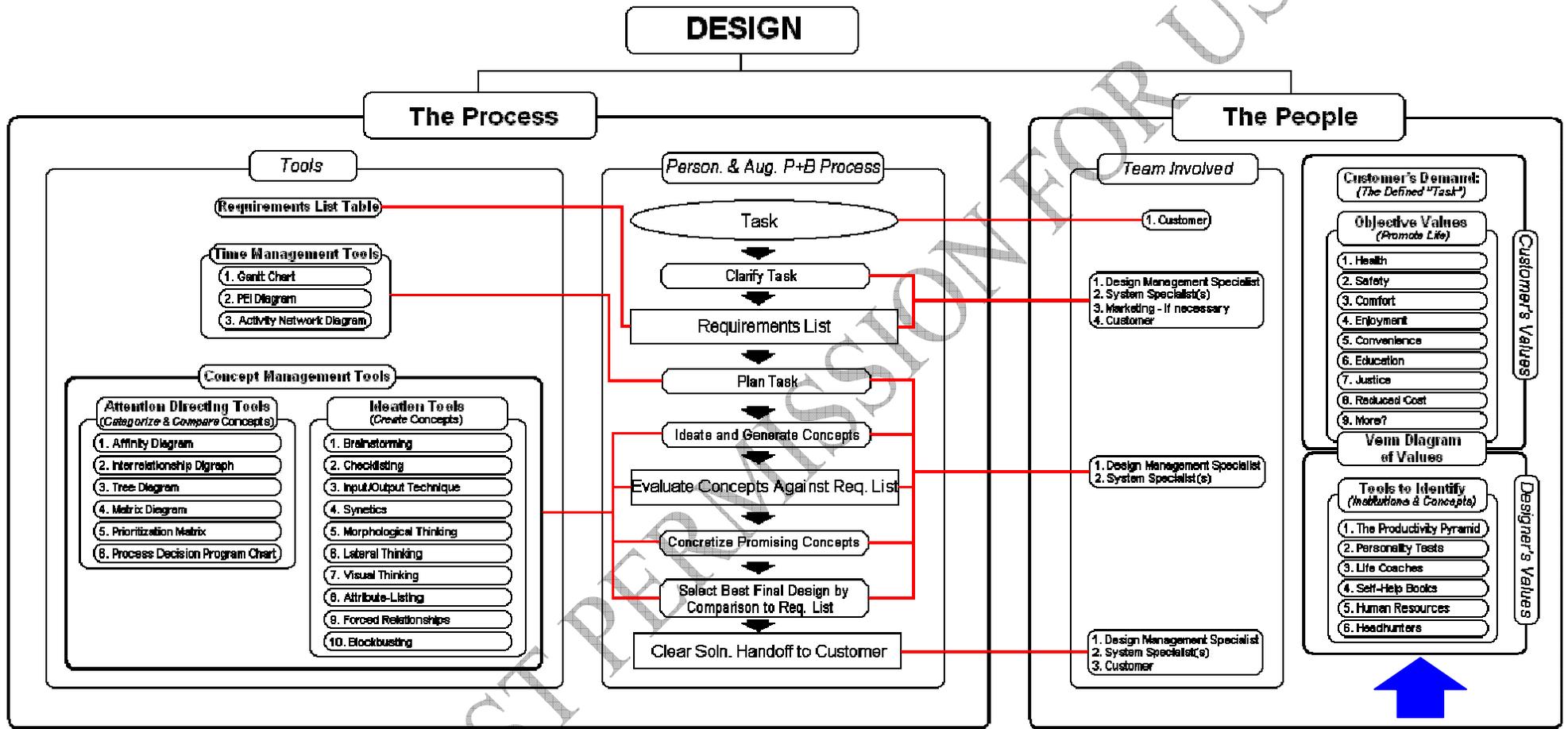


Fig. 4. Expanded design process with new concepts relating to design ethics included. Augmentations indicated by blue arrow.

Appendix A: The Ethical Dilemmas of The Relativist School

Earlier, we were given two essays on the Validation Square (2, 3). In my opinion, the Validation Square is a very useful tool. As I stated in my learning essay on progress:

“I believe that the Validation Square... has very strong parallels with the scientific method. The scientific method is the testing of hypotheses against example problems which are aimed at testing the hypothesis[‘ validity in reality]... If the hypothesis is validated, then the statement can be made that, “Given the context of our knowledge to date, this hypothesis or theory is correct.””¹³

In this quote, I emphasize the point that the Validation Square’s purpose is to validate a design method. Its purpose is to ensure that the design method being tested *produces value* by *successfully aiding real design situations*. Of course there is value in ensuring that design methods can be practically applied – and the Validation Square provides this reality check!

However: I balk at the philosophical grounding for this tool. In the section of these essays which describes the history of philosophy, two schools are identified: “foundationalist” and “relativist.” I believe that it is somewhat accurate to group the two broad schools of philosophical thought into “foundationalist” or “relativist.” There are indeed two fundamental approaches to epistemology. One regards reality as something independent of man’s mind, which we can objectively and accurately interpret. This view is generally encompassed by the definition of “foundationalist” in (2) and (3). “The Relativist School” rejects this view, and says that reality is subject to “interpretation.” It is, fundamentally, a rejection of the idea that reason and logic are capable of determining objective truth.

This raises the question: from where do we derive truth, if not through the interpretation of reality through reason? The historical answer for this question by The Relativist School has usually stemmed from one of two sources: *mystical subjectivism* (truth is derived from religion) or *social subjectivism* (truth is what the ‘social norms’ of the group of people deem it to be). Truth, according to these distinct schools within The Relativist School of epistemology, is relative to religion or cultural norms. **The social subjectivist foundation is what essays (2) and (3) base design knowledge on:**

“We define scientific knowledge within the field of engineering design as **socially justifiable belief** according to the Relativistic School of Epistemology.”^{2,3} [emphasis mine]

Earlier, I demonstrated the fact that man has a specific nature. I emphasized that one aspect of his nature is that he is a living being and the possibility of life and death is possible to him. In this essay, I have proposed that design must be founded on man’s nature—his requirements for survival—if his life is to be advanced. Essays (2) and (3) base design knowledge on “socially justifiable belief.” What happens in the following cases when social beliefs, and not objective facts, are the basis for design?

- A design engineer, working within a struggling company, is encouraged by all of his coworkers and management to reduce the gage of a pressure pipe in a

- component he is designing. He has done the analysis—reducing the size of the pipe could lead to catastrophic failure. But his coworkers demand that he reduce the pipe’s size; the company will go bankrupt if the design contract is not won, and costs must be driven out to win it. Does he heed his life-promoting design ethic, or does he listen to the “socially justified belief” of his coworkers?
- A lawmaker running for national office in the late 1960’s is designing the platform for his political campaign. The national furor over DDT is at its peak after the publication of Rachel Carson’s “Silent Spring” in 1962. It is quite evident that it would be political suicide for him to defend DDT’s use in any way. Yet the lawmaker is aware that when DDT was employed to combat malaria in Sri Lanka in 1964, the incidence of the disease dropped from 3 Million cases per year down to just 29.⁴ Does he kowtow to the socially justified national belief in an international ban of the substance, in order to get elected? Or does he do the ethical, life-promoting thing and call attention to the fact that opportunity costs exist for people in countries stricken by malaria: a possibility of cancer may not be as bad as a probability of death from malaria? It was only in 2006, after three decades of banned use, that the World Health Organization decided to reinstate its use against malaria in heavily affected regions.¹¹ In the interim, millions of people, most of them children, have died and hundreds of millions more have suffered from the disease.¹² This happened because lawmakers designed policy with the socially justified belief in banning DDT in mind—not the facts of man’s nature, his requirements for survival, and these people’s personal evaluation of the opportunity costs available to them.
 - A CEO of an investment bank is designing his company’s growth strategy. Where should he invest a significant amount of his company’s capital? The CEO observes that many other investment banks are getting into the “hot market” of housing. However, the CEO is aware that government incentives are promoting an unnaturally rapid growth in this sector by promoting unprecedented numbers of risky housing loans. The CEO could follow the lead of the government incentives and the rest of the investment bankers, and make a profit by helping to inflate the housing bubble. But, in so doing, the future financial solvency of his company will be jeopardized; the savings of his investors and the jobs of his employees will be obliterated when the housing bubble pops. Does he follow the current “socially justified belief” in ‘housing for all,’ or does he invest wisely to protect the savings of his investors and the jobs of his employees?
 - A physicist in WWII era Germany is working on the design of Germany’s nuclear weapon. The physicist is quite aware that the goal of the Nazi party is global domination by military force. Does he continue to help develop a weapon which will further the “socially justified belief” in the Third Reich’s dream of worldwide subjugation? Or does he acknowledge that human life has value – that the purpose of the government is defense, not domination? Werner Heisenberg is believed to have done just this—as the lead physicist on Nazi Germany’s nuclear program, he is thought to have prevented the development of the bomb by

purposely slowing the project down.

These cases are all real situations which illustrate what happens when “socially justifiable belief” guides design ethics. Critically, they illustrate that:

“Socially justified belief” in different times and places can contradict what is necessary for humans to survive and thrive.

Relying solely on “socially justifiable belief” can, does, and has harmed or jeopardized human life in the past. I believe that The Relativist School of philosophy cannot be relied on for *ethical* guidance in design situations – *not if the basis for ethics is the value of human life*.

I have elaborated in this learning essay on what we need to rely on for good ethics in design – we need to rely on the facts of man’s nature – what allows men to survive and thrive. For this, I turned to the Objectivist ethics, which **does** state that *the primary value which must be upheld in ethics is human life*; all auxiliary values must be in accordance with furthering man’s life. “Objective Design Ethics” does not rely on “socially justifiable belief” for design guidance; instead it helps us achieve the goal we stated earlier: “producing products which improve people’s lives.” The facts regarding what is good for man’s life are not subject to a majority vote! Condensing the previous discussion into a short paragraph:

“Man’s nature is specific. Things which promote his life are different from things which harm it. Man’s life has value and thus our designs must *further* life, not harm it. It is our task to identify and design products which promote life.”

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