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The Ethics of Creation

In 1851, Great Britain organized the Great Exhibition to celebrate its global industrial, military and economic superiority. The Exhibition included over 13,000 exhibits, from all the corners of the Empire, as well as from the 'less civilized' world. Over six million visitors flocked to Hyde Park to see the marvels of the Industrial Revolution, shown in a specially constructed Goliath of iron and glass, the Crystal Palace.

After the exhibition closed, the Crystal Palace was moved to South London, where it was destroyed by fire in 1936. Over a million square feet of glass are now gone, and many windows have been broken. Now we all live in a crystal palace. We are surrounded by technical miracles and wonders, and a constant flow of new inventions. Innovation has become a central driving force in everyday life, politics and economics. Countries and regions are ranked by their "innovation capability." People are told to join the creative class. Visionaries envisage futures where imagination and dreams rule the world.

The Crystal Palace exhibition was the first international celebration of technical innovation and novelty, and as such, it also put prevailing social beliefs about progress and the nature of inventions into sharp relief. It was organized at a time when the Industrial Age had become real, but when it was still marginal. The new world had already been born, but was still taking its first steps.

Culturally, the Crystal Palace exhibition represented an act of faith in the idea of the individual creator and of innovation as a source of progress. The spirit of the Crystal Palace was closely related to the new romantic image of the individual personality, which becomes real to the extent that the uniqueness of the individual flourishes and is expressed.

Romantic ideals of human creativity were often formulated through poetic and artistic works. Scientists, industrialists, and innovators choose another way to celebrate the uniqueness of human individuality. Instead of working with expressions of the inner nature of human personality, they operated on external nature, making machines and turning natural forces to new purposes. In this process, the creators encountered a fundamental dilemma of creativity. When innovation matters, it matters because it has an impact on our social and material reality. Innovation is not an end in itself. It opens up a new world and new possibilities for action, and poses a question. Who will be responsible for that new world?

This question was at the core of Mary Shelley's *Frankenstein, or the Modern Prometheus*, in 1818. In Shelley's famous story, Frankenstein creates new life using methods that resemble a combination of modern stem cell research and alchemy, but forgets that the outcome should also be socially acceptable. Rejected by everyone, including its creator, for its ugly appearance and bad smell, the monster becomes a monster. Frankenstein successfully invents life, but ends up with a tragedy, as he finds himself incapable of taking responsibility for his creation.

In contrast with Goethe's *Faust*, which expresses the romantic individualistic concept of actor and personal identity in a pure form, Shelley highlights the social embeddedness of

human individuals. Identity is not something we can invent on our own. Individuality is fundamentally a social phenomenon. The concept does not make sense without the presence of others, against whom individual identity can be distinguished and for whom individual differences make a difference. Individual uniqueness, therefore, is something that is essentially given to us by others and is reflected through the presence of others. Without these others, no mirror could show that we are ugly monsters, and without the presence of others, our cadavers would smell quite normal to us.

Shelley notes that there is a social dimension involved. She, however, still hovers somewhere between the individualistic and social concepts of identity: between the newly discovered concept of the unique individual and a realization of the fact that this cannot be the whole story. This creates the central ambiguity of Shelley's story, which has resonated now for almost two centuries as a counterpoint to the Gloria of Creation. Victor Frankenstein, unintentionally and without much forethought, launches a sequence of actions that soon escape his control. It could happen to anyone. The tragic hero of the story, however, is the monster. He is a modern traveler, smitten by the forces of nature and human treachery, searching for a way home through rain, darkness and snow, eventually freezing in the Arctic ice.

To understand how modern innovators could solve Frankenstein's problem, it is necessarily to dig up its roots. They can be found quite deep in modern Western culture. In fact, they can be found in highly compact form in a philosophical error in the Book of Genesis.

The first time Genesis makes the error in question is before the first day of creation. God first creates the heavens and the earth, and then starts to move over the dark surface of the waters – in a world that, strictly speaking, is formless and void. This does not create major conceptual challenges for students of creativity and innovation, as it is easy to read the text metaphorically. The conceptually interesting point, however, emerges in the famous third verse, where God says: "Let there be light."

The question is: "For whom?" What is this light that separates the day and the night, before there are any created beings? Is it something that is visible to bees or bats? Or perhaps owls, trees, sharks, or mosquitoes? Is it something that humans will perceive as light, after God decides to add humans to the picture? Or should we assume that the creation starts with the universal light of God, which is visible to God himself? Does this mean that God cannot see before he turns the lights on, or into the dark corners of his creation?

The fifth day repeats this philosophical challenge in a more concrete form. After creating sea monsters, fish, and birds on the fourth day, the fifth day is the day for beasts, cattle and all creeping things. But what, exactly, is the difference between beasts and cattle? How can a creator know whether he is creating beasts or cattle?

In fact, one might have to know God's complete plans to know the answer. Moreover, there has to be such a plan, in which all the beasts and beauties of nature have their predefined place. Cave paintings, however, show that the difference between a beast and cattle is not easy to draw. An animal with horns and hooves that hunts humans across fields and forests, and makes them climb trees and rocks looks pretty much like a beast. If the same animal provides them with milk and cheese, it looks pretty much like cattle.

The distinction between beasts and cattle is not given in the animal itself. It depends on our relationship with the animal. The essence of created things, as they become meaningful for humans, can never be found simply by looking at the thing itself. Nor can the essence be found by turning back to our private beliefs. The world is not just our fiction – what we decide it to be. Instead, the meaning of things is in between the world and us. It cannot be reduced to the characteristics of the objects that surround us, and it cannot be found simply by digging into our brains and discovering beliefs that fix the reality. For this reason, the traditional Western worldview, which sees the world through the distinction between subjects and objects, and which underlies our conventional models of technology, knowledge, and innovation, necessarily becomes problematic. It can never solve Frankenstein’s dilemma. It has simply conceptualized the act of creation in a contradictory and misleading way.

To address the dilemma properly, we have to give up the traditional heroic model of creators. Or, more accurately, we first have to reinterpret what innovators and innovations are, and then enhance the heroic conceptualization of creation so that it becomes coherent. Here it is useful to start from the traditional model of innovation, as economists and schoolbook histories often describe it.

The conventional way to describe innovation is to explain it as a linear sequence. First, an inventor makes an invention. This is the original act of creation, where light descends over the heroic genius, a light bulb goes on, and a new idea is born. In this story, Nobel Prize winners climb mountains and suddenly realize that human genomes are twisted spirals; wake up from nightmares where snakes eat their own tail and realize that chemicals form cycles; and, in general, experience a flash of revelation about the inner workings of nature.

The world, however, is full of such inventions. From the social and economic point of view, the real innovation activity starts when the idea is developed into something that works. This phase has typically been the focus of innovation theorists who have studied the economic and historical aspects of innovation. In modern business organizations, this phase is often called “new product development.”

When the product is ready, it still has to be taken into use. If the users – in the modern world they are also called customers – like the product, it diffuses into and penetrates the society. The conventional sequential model of innovation, therefore, consists of phases that are typically described as invention, development, product launch, and diffusion.

Modern theories of innovation have refined this linear model by adding feedback between the different phases of the process, and interactions between the innovation process and its economic and social environment. A more radical revision, however, becomes necessary if we realize that new products and innovations gain their meaning only after they are taken into use. They become cattle or beasts only after they are tamed as cattle or left to haunt us as beasts. This means that the true act of creation occurs when the users become creative and find new meaning in the world that surrounds them.

In practice, this distinction is important. It implies that the traditional ‘inventors’ have little control over the ‘innovativeness’ of their works, and that users decide what counts as an innovation. An innovation can be created using novel products, technologies, or knowledge. It can, however, also be created by reinterpreting already existing technologies, knowledge,

and products. This is happening around us every day. It would be easy to see, if the heroic model of innovation were not so deeply embedded in our systems of belief.

In practice, people constantly find new innovative ways to use material artifacts and knowledge. The classic example is the telephone. When it was introduced in the U.S., innovators and entrepreneurs speculated that it would be used to broadcast news, wheat prices, church services, and lullabies that would put children to sleep. The modern use of telephony – as a communication medium between people and a means for ‘social visiting’ across distance – was invented by American housewives, decades after the technology first became available. Similarly, the short text message feature on modern mobile phones was originally intended for simple technical messages and general notices, and the designers of telecommunication equipment had no idea that, in just a few years, text messages would become a major source of profits for telecommunication operators. Many Internet technologies have also been created in this same manner by the users. First, engineers have designed new technical functionality from their own point of view and for their own purposes, and then the users have reinterpreted the possibilities of the new functionality, becoming the driving force in technical evolution. This pattern underlies the history of the World Wide Web, email, peer-to-peer file sharing, as well as the core technologies of the Internet itself.

At the time when new innovations are created and produced they have ‘interpretative flexibility,’ which is not controlled by the original creators and producers. To understand innovation, we therefore have to understand how the users actually create meaningful interpretations of material artifacts that emerge in the world. One way to understand this is to use language as an analogy.

When new concepts are introduced into a language, they acquire their meaning in the social contexts in which they are used. New concepts and words become real when they become useful tools in social practices. Concepts are deeply practical. They are not abstract immaterial things; instead, they are the substrate of social reality, which is expressed through communicative and other acts. Words matter when they make a difference and create useful distinctions. If they do not make a difference, they do not matter.

Language is inherently social, and linguistic distinctions have to be socially relevant. We cannot invent private words or private languages. Words exist only in a complex system of language, in which concepts gain their meaning through a multitude of pragmatic links with the underlying social reality. During our individual history we learn words and concepts and their interrelated meanings, which are grounded in historically developed social practices. Over our lifetimes, we advance in this field of linguistic learning so that we are able to become participants in multiple linguistic practices and genres. Our poetic contributions can also expand these practices. The underlying cultural stocks of meaning, however, always remain the slowly moving foundation on which we have to build socially meaningful interpersonal communication.

The social foundation of language, however, is not a formless void without structure. In a social world, we cannot float over a flat surface, waiting for the right moment of creation. As Genesis teaches us, worlds are created by making distinctions: by separating days from nights, heaven from earth, fish from birds, beasts from cattle. These distinctions are useful because they make a difference. The appropriate distinctions, however, depend on what we do and who we are. If we are blind, the difference between night and day cannot be based on

light or its disappearance. If we do not know how to milk a cow, beasts and cattle look the same. If we have a spear, a beast may look like food. When Prometheus brings us fire, the world appears in a new light. Trees start to look firewood, and the dark corners of a cave may start to look like a canvas for creation.

Social structures of knowing and acting, therefore, define the way in which the members of a society understand and interpret the world. These structures, in turn, are closely related to those social practices that we engage with in our everyday lives. Many of these practices are commonly shared by the members of a specific culture. Some practices are relatively universal, even across cultural boundaries. In the modern society, which is characterized by a complex social division of expertise and labor, many practices are, however, strongly located. People learn these practices during the course of their lives, through education and socialization. In this process, they become competent members of the social groups that carry on these practices. Doctors become doctors, engineers become engineers, poets become poets, and watchmakers become watchmakers.

When new technical tools and artifacts are thrown into this landscape of social practices, the different potential user groups try to make sense of the new opportunity. If they recognize it as an opportunity, they may adapt their current practices to take advantage of it. Instead of sending a messenger, for example, they may pick up a phone, and instead of making a phone call they may send a text message.

Sometimes this adoption process is easy and straightforward. This happens, for example, when an existing social practice is simply implemented using a new tool that makes the current practice more convenient. Often, however, innovations require a change in social practices before their potential can be realized. Typically, this implies a change in the established social relations within the community consisting of the practitioners. Strictly speaking, innovation, therefore, implies revolution. The revolution may appear as relatively smooth evolution, but it often also becomes a bloody battle among the participants.

The different social groups that play different roles in the society are also in many ways interdependent. This means that when one group changes its practices, other groups often have to adjust their practices, too. The effects of innovation, therefore, often propagate across several communities of practice. Technological innovation, for example, can reorganize and recombine social relations between groups, sometimes making some groups quite irrelevant for the rest of the society. If the group has sufficient resources, the potential threat of oblivion can lead to conventional revolutions, as well.

In this sense, all innovations are social innovations. Innovations become real when new technical gadgets or concepts are taken into use in a social group that carries on a specific social practice. This is the true moment of creation. The flash of creative light does not strike an individual inventor; instead, it shines on a community of practitioners.

This also means that ethics and innovation are inseparable. Communities that carry on specific social practices perceive the world using those distinctions that make sense in their community. When a person looks up at the night sky, what she sees depends on whether she is a navigator on a ship, a poet, a meteorologist, or an astronomer. The stars are not fixed: they change their nature depending on what we do on earth and in which social practices we are participating.

Each community of practice has its own way of perceiving the world and orienting itself within it. Its way of making distinctions in the world depends on the relevance of those distinctions in relation to the activities of the community. The relevance or irrelevance of the phenomena of the world, in turn, rests on historically accumulated value systems that organize the life of the community. Each community has its own ideas of what is good and valuable, and these fundamental value orientations define the dimensions of the world, as the community perceives it.

The ethics of innovation, therefore, requires that we understand how local value systems interact and how their boundaries can be crossed. In the global information society, this requirement becomes increasingly acute. Information and communication now flow across the world, making local communities increasingly transparent to the rest of the universe. Information networks are becoming networks of cultural diversity.

This also means that innovation and politics are inseparable. When new technologies and knowledge reorganize social relations within and across communities, the ways in which this happens depends on the power relations in the society. As the users are the focal creators of new innovations, the political question is: Who is allowed to define new innovative ways of acting in the society? From a political point of view, the realization of innovations means that their ambiguity and interpretative flexibility is reduced in a process in which some voices speak louder than others. Who has a voice and how loudly it is heard, depends on the political principles implemented in the society and culture in question.

Frankenstein's monster never gained a voice in its community, and therefore it was left without a means of communication. In such a situation, attempts to participate in the social sphere become unidirectional, violent, and asocial. To get its point across, the monster starts to kill people. When words do not have enough meaning, people throw stones.

Words may also have insufficient meaning because they mean so very different things in different communities. The impact of innovation or social change can therefore never be fully explained within one single community, using one specific local language or value system. This implies that innovative activity has to be accompanied by an ethic that is based on listening to others. The starting point of an ethics of creation has to be openness to alternative interpretations.

This, however, also implies that the attempt to solve ethical problems by gathering more information and facts is doomed to failure. In the enlightenment tradition, more knowledge was supposed to lead to a more accurate picture of the world. According to this view, better information and knowledge would finally allow us to take all the relevant facts into account, and we could eventually decide what is good or bad. The problem, however, is that there are many incompatible value systems in a society, and the criteria of relevance vary across the different communities in the society. Therefore there can be no universal lists of criteria that could be used to add up and weight the facts. The only way to solve this problem is to bring the participants together and allow them to communicate. This is why modern information and communication technologies have radical consequences for societies, states, and our everyday life.

The ethics of innovation has its foundation in a political process, which cannot be replaced by any given set of 'hard facts.' What counts as a 'fact' depends on the underlying worldview, and the worldview depends on the value system that underlies the community in

question. Although people are often members of many different communities, and can jump from one value system to another depending on what they are doing, there are no society-wide communities of practice. The modern society is fundamentally based on social diversification and complex divisions of labor. If it wants to avoid regressing to value fundamentalism and political totalitarianism, it cannot rely on universal facts.

The enlightenment vision of solving ethical problems by collecting information about the consequences and impacts of new technologies is doomed to failure for the same reason. Information always emerges within a context where it can make sense. Information is not universal, and bits and facts always remain rooted in social practices and communities that represent specific pragmatic interests in the complexity of the real world. Frankenstein can therefore never take responsibility for his creative acts on his own, using only his personal horizons of perception and understanding. If he wants to be an ethical innovator, he should talk to the monster and ask what it thinks, and he should also ask what the rest of the village wants. In the modern world, we have to go even further, and cross regional and cultural boundaries and barriers. There are no ultimate, final answers. The process is an end in itself.

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