

## The Ingenuity Gap in a Fragmented World

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This morning I'm going to talk about "The Ingenuity Gap in a Fragmented World." I'll ask whether humanity can meet the ever more complex and fast-paced challenges it's creating for itself. At the global level, these challenges range from climate change and chronic instability of the international economy to continent-wide pandemics of TB and AIDS; and at the national level, they include widespread homelessness in our great cities, chronic health care crises, and widening gaps between the super-rich and everyone else.

I'm going to organize my remarks today around three questions:

First, how bad, really, are these problems?

Second, do we have the tools to address them?

And, finally, how can television help?

I'll begin my answer to these three tough questions by taking you on a voyage to two distant places. One is among the hottest places on this planet; the other is among the coldest. One is among the most densely populated; the other is among the least populated. These places are far from our daily lives, and far from our imaginations and busy preoccupations in this beautiful mountain setting. And they couldn't be more different from each other. But taken together - seen as two crucial parts of a whole - they convey a powerful and deeply alarming message.

I'm going to tell you the stories of a little girl in northern India, and of a group of scientists at the Vostok research station near the South Pole.

The little girl is a star of my recent book, *The Ingenuity Gap*. In this book, I look at whether modern human societies can cope with today's extraordinarily complex and dynamic challenges - challenges that cross the spectrum of politics, economics, technology, and ecological affairs. These challenges converge, intertwine, and often seem to be largely beyond our ken - incomprehensible even to our leaders and specialists.

Writing this book involved bringing together ideas and evidence from dozens of different fields and from people I interviewed and places I visited around the world. I often felt bewildered - even overwhelmed - by the task of pulling together all these pieces of my "ingenuity puzzle." But I was inspired to continue, in part, by a poster-sized photograph of the little girl hanging on my office wall.

I had taken the photograph myself, a few years earlier in a street in Patna, the capital of the state of Bihar - a state that straddles the Ganges River in northeastern India.

After a long walk down a noisy, impossibly crowded, and garbage-strewn thoroughfare, I had spotted her on the other side of the road. I crossed over, knelt down beside her, and took five quick shots. The moment lasted no more than thirty seconds. Then I kept walking.

Bihar, one of the most wretched states in India is wracked by crime, violence, and disease. Its politicians and elites are staggeringly corrupt; its pathetic infrastructure of roads, sewers, water pipelines, and electricity grids is collapsing; and its tired croplands must support some of the highest-density farming populations in the country. I went there to study the links among population growth, cropland scarcity, and a vicious insurgency in the countryside. I left with a wealth of information and ideas provided by the many extraordinary people I met; I also left with photographs of the little girl.

Like many people, I enjoy taking photographs of children when I travel and have dozens of shots stacked in boxes around my office. A few of the shots, some almost twenty years old, have made it on to my walls. When I look at them, I often wonder who the children are. I wonder about their names, whether they have grown up healthy and happy, and what they're doing now.

As I sat at my desk trying to make sense of my ingenuity puzzle, I asked myself these questions about the little girl in the photograph. She didn't look happy: although she was less than two, her face already betrayed an immense weariness and distance. After a while, I realized the eyes in the photo were watching me too. For some unfathomable reason, I became convinced that this little girl held some of the key pieces

to my puzzle. So I decided I would go back to Bihar to try to find her.

And that's what I do. In June, 1998, after traveling around the world, I find myself back in Patna at the height of the worst heat wave India has ever experienced, with temperatures reaching nearly 50 degrees Celsius. I have the photograph in my hand, and I'm looking for this little girl.

It was a quixotic, even bizarre things be doing, I knew - to travel to the other side of the planet to find a single, unidentified child. I had no idea whether I'd succeed, or even whether it would be meaningful if I did. And in those moments when I was completely frank with myself, I admitted that I really had no idea why I wanted to find her. I was simply drawn to something about her face, and her angry, enigmatic expression. People's faces, I was slowly realizing, are critical connection points among us in our increasingly fluid, atomized, and dehumanize world. Faces - as we look for them, come to know them, and remember them - can help us translate crowds in community, and selfishness and egocentrism into empathy and generosity.

Eventually, I do find her. And in finding her I do answer some of my key questions. I'm not going to give you all the answers now (the book will be for sale after this session!), but there is one thing that I learned from this experience that I want to emphasize today.

The life and circumstances of this little girl - whose name, I learned, was Komal Kumari - show us that vast segments of humanity are being left behind, that the realities of individuals' lives are diverging across the planet, and that gaps between the rich and the poor, and between the powerful and the weak, are widening faster than ever before.

That's not to say that the circumstances of children like Komal Kumari haven't improved dramatically, even in wretched places like Patna, in recent decades. According to standard indicators of quality of life, she is much luckier to be alive today than a hundred or even fifty years ago. Only a few short decades ago, a female baby in India could expect to live to her early 40s; today, Komal Kumari will probably see her mid-sixties. When I found her, she was reasonably healthy, she had access to an adequate if not varied diet, and she had the prospect of obtaining a basic education.

But as I stood on the banks of the Ganges, near Komal Kumari's home, with a group of inquisitive children pressing around me, I couldn't help juxtaposing the

realities of those children with the starkly different, almost contradictory, realities of people's daily lives in the world's rich countries.

There, on the banks of the Ganges, in that unbelievably oppressive heat, nature was an ever-present and intrusive force; here in the wealthy West, especially in our large urban centers where most of us live, nature is hidden and marginalized. In Bihar, medieval technologies, like an iron forge powered by hand bellows that I had seen in a nearby village, were still in wide use; in Canada, lightning-fast technological change is a fact of everyday life. There, at least with respect to the Internet and modern communication technologies, a "zone of silence" prevailed; here, computers and the Internet are compressing time and space and creating vast new wealth by helping people exploit investments in knowledge and ideas.

It might be true that the lives of Komal Kumari and most other children in Bihar were, on average, slowly improving. But at the very same moment, most children in rich countries were shooting into the future at blinding speed, and Komal Kumari was being left in the dust.

Just when communication technologies and jet travel are binding our planet together ever more tightly, history's biggest differences in wealth, opportunity, and human experience are emerging. Two hundred years ago - only three lifetimes ago - over 90 percent of the people on the planet lived in farming communities and most everywhere one went the cadence of people's lives was fundamentally similar. But today, on the same tiny planet, we have impoverished families in the urban slums of northern India next to the virtual realities of webware designers in Silicon Valley; we have the high-tech hyperactivity of investment bankers in London next to the struggle for survival of rural mothers in Africa who must walk kilometers for their daily water; and we have the gated elite communities of Orange County, California, next to the bombed-out rubble of Kabul in Afghanistan.

At the same time that we are discussing here the wonderful programming for the television of the next decade, half the people on the planet have never made a phone call. Nearly a third of the people in the developing world remain in absolute poverty, living on less than a dollar a day. They can't buy shoes; they can't buy adequate meals or medicine for their children, let alone an adequate education. In India, an estimated 60 percent of all newborns are in such poor condition from malnutrition, low birthweight, and other causes that they would be immediately placed in intensive

care were they born in California.

And the gulf between the poorest and wealthiest people on Earth is widening very fast. In 1960, the income of the richest 20 percent of the world's population was thirty times that of the poorest 20 percent; in 1998, it was eighty-two times greater. In the same year, the combined wealth of the world's richest 225 people (a total of \$1 trillion) exceeded the annual income of the poorest 47 percent of the planet's population, about 2.5 billion people.

Despite the miracles of modern communication - and of increasingly integrated, globalized markets - our national and global societies are, in many respects, fragmenting into a montage of discrete realities. Those who talk about how globalization will produce the convergence of the human experience to a common and shared reality are speaking about the richest one billion people on Earth; in fact, the differences among us have never been so great. Whole sections of the planet's population have disappeared from our collective consciousness: half a billion people in Africa, for instance, are now largely absent from our shared human discourse.

Now what about the atmospheric scientists and geophysicists at the Vostok research station in Antarctica? What story do they tell us?

From the 1970s into the 1990s, an international team of scientists, originally led by Russians, drilled down into one of the ice sheets that cover much of the southern continent. They extracted a four-kilometer-long cylinder or "core" of ice that represents a record of Antarctic snowfalls going back 420 thousand years.

Over this immense period of time, each new snowfall compressed the previous one beneath it, and the layers upon layers of snow accumulated into the vast ice sheets we find in Antarctica today. Through precise and painstaking analysis of the ancient snowfalls in the ice cores - including the air bubbles trapped in the snow - the scientists determined both the atmosphere's carbon dioxide concentration and its average temperature over Antarctica at the time the snow fell.

What they found shocked them: they had unlocked from the ice evidence that humankind could be throwing the planet's climate completely out of kilter.

During the 420 thousand years, carbon dioxide concentrations and air temperature varied almost in lockstep: as the carbon dioxide concentration rose, the temperature rose; as the carbon dioxide concentration fell,

the temperature fell. The scientists knew that this close correlation between carbon dioxide levels and temperatures didn't necessarily mean that changes in carbon dioxide levels caused the changes in temperature. But the ice cores provided impressive prima facie evidence of the link between carbon dioxide concentrations and temperature.

But what was most shocking was how humankind had already shoved the carbon dioxide concentration far outside the range of fluctuation that had prevailed for hundreds of thousands of years. Today, this concentration is a third higher than the concentration in preindustrial times. Most experts now believe that in the next one to two centuries we will see at least a doubling, and perhaps a quadrupling, of carbon dioxide concentrations from preindustrial levels. And this increase is happening in the blink of an eye - relative to the timespan of 420 thousand years.

Experts can't say for sure what effect the increase will have on the planet's average temperature. But the Vostok ice cores suggest temperature will rise, and rise fast. Computer models predict that the warming of the next hundred years will probably happen faster than any warming of the last ten thousand. And once we get beyond a doubling of carbon dioxide - something that will probably occur sometime in the last half of this century, certainly within the lifetimes of our grandchildren - scientists' models of the global climate break down. At that point, they don't have a clue what will happen.

One thing, though, is certain: with each incremental ton of carbon we emit from our cars, powerplants, and logging operations, we are producing, inexorably, an atmosphere that is greatly different from the one that influenced human civilizations in the past. In fact, in the next two hundred years, we may produce an atmosphere with carbon dioxide levels that Earth hasn't seen in hundreds of millions of years.

It's not just carbon dioxide, although carbon dioxide emissions and climate change are getting a lot of attention these days. Around the planet, we are moving so much rock and dirt, blocking and diverting so many rivers, converting so many forests to cropland and pastureland, releasing such huge quantities of heavy metals and organic chemicals into air and water, and generating so much energy, methane, and nitrogen compounds that we are perturbing the deepest dynamics of our global environment.

A similar pattern is unfolding in practically every domain of human activity. We seem to be doing

more of everything, over larger areas, faster than ever before. It's as if we've got our collective foot slammed down on the world's accelerator pedal. And in the process, we are creating problems for ourselves whose magnitude and complexity are almost beyond comprehension.

What, then, do the stories of the little girl and of the scientists - of Patna and Vostok - tell us? Together, they tell us that at a moment when we're facing the biggest challenges in our history - challenges that will demand of us every ounce of ingenuity and goodwill we can muster - we are more fragmented and incoherent in our personal experiences and our perceptions of ourselves than ever before

I don't have a checklist of answers to the problems we face, but I'm convinced that the starting point has to be aggressive action to counter this trend towards the fragmentation of the human experience and our shared identity. Indeed, our individual, everyday experiences and our collective identity are intimately linked. If people's everyday lives around the planet are similar in some respects - if we retain some commonality of individual experience - we have a basis for empathy. And from empathy we can build community.

Without that sense of community, we are likely to face a monumental ingenuity gap - a gap between the rapidly rising difficulty of the problems we face and our restricted ability to supply solutions to these problems.

Our supply of solutions will be restricted because we won't think of each other as members of a common human family and, as a result, we won't be prepared to make the sacrifices for each other or share costs among ourselves to deal with problems such as global climate change.

The great mathematical psychologist, Anatol Rapoport, and a former colleague of mine at the University of Toronto, once said that "The moral development of a civilization is measured by the breadth of its sense of community." Rapoport's deep point was that community is essentially a moral concept. And a community's moral status is partly about where it draws the line between who is in and who is out; it's also about the moral deal the community's members strike among themselves - their agreed principles of what constitutes fair treatment of each other.

Have we paid enough attention to the moral development of the global civilization we are creating

today? As the gulfs of wealth, power, opportunity, and experience widen among us, we need imagination, metaphor, and empathy more than ever to help us remember each other's essential humanity. This will be the central challenge of the coming century - one that will shape everything else about who we are and what we become.

We live cheek by jowl on this little patch of land, now - this tiny planet, surrounded by an endless void.

We can get to the other side of the planet in less than twelve hours, if we want. I'm surprised that we all haven't begun to experience an overwhelming sense of claustrophobia. This place is cramped, and it's going to get vastly more so in coming decades. Travel into space isn't really an option, except for a tiny fraction of us: it simply takes too much energy to get there. And who really wants to live there, anyway? Space is a region that's ferociously hostile to human survival, and where we have to use all our wits just to cling to existence.

So we are going to have to make it work here, on Earth.

And we are going to have to reach agreement on how 10 billion of us will live together in very tight quarters, because that's the number of people who will likely be alive on this planet within a single lifetime.

In this new world we are entering, producers of content for electronic media, especially television, are critical actors: In a time of increasing fragmentation of audiences and message, they must work to build that broader moral community - and the global human identity - that will allow us to bridge the widening gulfs of wealth and power, and to begin the common search for solutions to the enormous problems we face.

We might think that modern communication technologies make it easier to meet this challenge. And in some ways they do: with devices from satellites to broadband fiber-optic transmission, it's now possible for an electronic message - say, a television program - to reach every corner of the planet, even the city in India where Komal Kumari lives. In fact, many families in poor countries around the world put the purchase of a television set ahead of the purchase of basic sanitary facilities or clean water.

So, the capacity to reach the audience is there, but it is the audience listening?

Here, the answer is less clear. Modern communication technologies have tended to fragment the content, or

message, for both sender and receiver.

On the sender's side, the story is well-known: new technologies - the advent of digital TV is but one example - allow content to be targeted to ever-smaller and more finely defined audiences. In many ways this is a good thing, because it dramatically increases our range of choices. But there's a downside: I would argue - along with Cass Sunstein in his recent book, *Republic.com* - that as the average size of audiences decreases, and as the content of television messages is more precisely calibrated to the tastes of those narrow audiences, it becomes less likely that viewers will stumble upon ideas, opinions, and information that challenge their preconceptions or that encourage them to understand people and groups who are different. There's a big paradox here: our rising diversity of content, and our improving ability to target that content to specific audiences, may actually be encouraging narrow-mindedness and a weakening of our sense of community.

On the receiver's side, fragmentation of content is caused by information-glut, something that is especially acute in rich countries. We all experience it in our daily lives. In the last twenty-five years, word processing technologies have probably doubled the average writer's output of memos, reports, articles, and books. Not only can people generate more information faster, they can now replicate it infinitely, and deliver this information through many more conduits. Some of these conduits, like a fiber-optic cables, have millions of times greater capacity to deliver information than the those we used twenty-five years ago.

More information plus more conduits plus greater capacity per conduit equals inundation - which is how most of us feel much of the time: inundated, drowning in information. In our day-to-day lives, we flit from task to task, desperately trying to sort and answer incoming messages and scrambling to deal with the issues they raise.

The problem in our information economy is no longer information generation and delivery. The problem is the interface between the information in our computers, in our voice mail and email boxes, and pouring out of our fax machines, and our cerebral cortexes. The critical bottleneck is now cognitive; we simply can't shove information into our brains fast enough and cognitively process it fast enough to keep up with the speed of delivery.

Info-glut affects our interpersonal relationships: it forces us to devote less and less time to individual

interactions in our social environment. Our relationships with people become truncated, abbreviated, and fragmented. Leisurely, handwritten letters have all but disappeared. Our email messages are stripped of nuance and texture and reduced to Morse-like staccatos of data. We snatch bits of conversation with colleagues and friends on our cellphones as we dash between meetings. We become ruder. It's now possible for people from every corner of the planet to contact us, so we simply stop responding to their messages.

In these ways, info-glut contributes to a fragmentation of community. It also fragments and abbreviates the deliberative process within our democracies. So much information and so many ideas are competing for the limited space in our brains that the day's perplexing public-policy issues and controversies must be condensed to single-sentence declarations and aphorisms. In this fight for space in our brains, ideas must be crude and unreflective to win. Slogans and dogma dominate.

So, at the very moment that the challenges facing our world are soaring in complexity and difficulty, info-glut attenuates our links to each other and drives us to simplify and sensationalize the challenges we face, and to dichotomize multifaceted policy problems into raging two-sided debates.

I'm not sure what our response should be to these trends, especially since fragmentation is caused by technological changes - the increasing power and reach of our information technologies - that seem almost inexorable. But perhaps one answer comes from recent research into the nature of the human brain.

For many years, centuries even, it has been conventional wisdom that the clearest manifestation of human intelligence is our capacity for rationality, logic, and analysis. On the other hand, our emotional responses to the world - fear, love, wonder, hatred, awe, and the like - have been depreciated as primitive, animalistic, and often dangerous.

But it turns out that this conventional wisdom is simply wrong. Recent brain research shows that what makes us the extraordinarily creative, intelligent, and flexible creatures we are is our capacity to integrate reason with emotion. Our emotions, it turns out, allow us to see ourselves as entities that have continuity through time - as beings that persist from the past, through the present, into the future. Without this ability to travel in time in our minds, we can't anticipate and plan, and we become simple animals that respond only in reaction to immediate pressures

upon us. We evolved these emotional responses over the last three million years, because they helped us survive.

Television, it goes without saying, excels at portraying and communicating emotions. That is its strength, not - as so many critics contend - its fatal weakness. And our emotional responses to the grave challenges we face as a species are not something that should be discredited and marginalized. If we are afraid of the consequences of global warming for ourselves and for our children, that's a good thing. We should be afraid. We should be in awe, emotionally staggered, by our newfound capacity to wreck Earth's environment. And we should be appalled by the absence of community - by those widening gulfs of experience, wealth, and opportunity - that keep us from pulling together to meet the challenges we face. Our common emotional response to these challenges - an emotional response that is so essentially human and that we all have available to us, regardless of our individual circumstances - could become the kernel of the moral community that our species so desperately needs.

If television can help convey these feelings around the world - through and across the proliferation of narrow, fragmented audiences; and deep into the psyches of the harried, information-overwhelmed citizens of rich countries - if it can help us use our emotions to really see each other's faces in this ever-more bewildering world, television will accomplish something beyond parallel. And this could be a turning point in our efforts to rescue what is worthwhile of our world for posterity.