Abstract:

Information technology is now an integral part of the lives of people across the globe. Use of technology leaves a trail that may be followed or misused by others. Breach of privacy of an individual's information could lead to serious consequences. The focus on technology and human relationships increases ethical imperatives, because what is done, how it is done and what the intended (and sometimes unintended) outcomes are, must be carefully examined.

Information technology is now **ubiquitous** in the lives of people across the globe. These technologies take many forms such as personal computers, smart phones, the internet, web and mobile phone applications, digital assistants, and cloud computing. In fact the list is growing constantly and new forms of these technologies are working their way into every aspect of daily life.

Every action we take leaves a trail of information that could be recorded and stored for future use. For instance, you might use the simple technology of keeping a detailed diary listing of all the things you did and thought during the day. But today you could **augment** that with even more detail gathered with advanced information technologies. Some examples include: all of your economic transactions, a GPS generated plot of where you travelled, a list of all the web addresses you visited and the details of each search you initiated online, a listing of all your vital signs such as blood pressure and heart rate, all of your dietary **intakes** for the day. Many other such examples can be imagined. As you go through this experiment you begin to see the complex trail of data that you generate each and every day and how that same data might be collected and stored through the use of information technologies. As this data gathering becomes more **automated** and ever-present, the next question is - who owns this data? For instance, which bits of information should be made public, which held private, and which should be allowed to become the property of businesses and corporations? Questions of the production, access and control of information are at the heart of moral challenges surrounding the use of information technology.

One might argue that this situation is no different from the moral issues **revolving around** the production, access and control of any basic necessity of life. But there is one major difference, if one party controls the access of some natural resource, then that, by necessity excludes others from using it. This is not necessarily so with digital information, which is **non-exclusory**, meaning we can all at least theoretically possess the same digital information as copying it from one digital source to another does not require **eliminating** the previous copy. Therefore, understanding the role of moral values in information technology is **indispensable**.

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**ubiquitous**—existing everywhere, **augment**—increase, **intakes**—act(s) of taking in something, **automated**—mechanical, **revolving around**—surrounding, **non-exclusory**—accessible to all, **eliminating**—removing, **indispensable**—essential.
The Moral Challenges of Information Technology

The move from one set of dominant information technologies to another is always morally contentious. Socrates lived during the long transition from a largely oral tradition to a newer information technology consisting of writing down words and information and collecting those writings into scrolls and books. For Socrates there is something immoral or false about writing, since it does not help foster wisdom and understanding. But the new information technologies follow the dictum: Why learn anything when information is just an Internet search away?

The Fundamental Character of Information Technologies

Information technologies change quickly and move in and out of fashion at a rapid pace. This makes it difficult to try to list them all and classify the moral impacts of each. The very fact that this change is so fast and momentous, has caused some to argue that we need to deeply question the ethics of the process of developing emerging technologies (Moor 2008). It has also been argued that the ever-morphing nature of information technology is changing our ability to even fully understand moral values as they change. In the given context, all information technologies or applications can be categorized into at least three different types as discussed below.

All information technologies record (store), transmit (communicate), organize and/or synthesize information. For example, a book is a record of information, a telephone is used to communicate information, and the Dewey decimal system organizes information. Many information technologies can accomplish more than one of the above functions and, most notably, the computer can perform all of them. Described as a universal machine, it can be programmed to emulate any form of information technology.

Moral Values in Information Recording

We live in a world rich in data and the technology to record and store vast amounts of this data has grown rapidly. The primary moral concern here is that when we collect, store, and/or access information, it is done in a just manner that anyone can see is fair and in the best interests of all parties involved. However, moral conundrums arise when that collection, storage and use of our information is done by third parties without our knowledge or done with only our tacit consent. Whereas traditionally the control of information was exercised by religious organizations, universities, libraries, healthcare officials, government agencies, banks, corporations etc, today each citizen has access to more and more of that stored information without the necessity of utilizing the traditional mediators of that information and therefore to a greater individual share of social power.

We need to look at some theories on how best to ethically communicate this recorded information while preserving privacy. Here we must address a more subtle privacy breach, the collection and recording of data about a user without his or her knowledge or consent. When searching on the Internet, the browser software records all manner of data about our visits to various websites which can, for example, make web pages load faster next time you visit them. Even the websites themselves use various means to record information when your computer has accessed them. Some websites are able to detect which other sites you have visited or which pages on the website you spend the most time on. And this happens all the time, without you being aware of it.

Further, information technologies are now storing user data in “the cloud” meaning that the data is stored on a device remotely located from the user and not owned or operated by that user. This ease of access has the result of also making the relationship one has to one’s own data more tenuous because of the uncertainty about the physical location of that data. Since personal data requires protection, the third parties that offer “cloud” services need to understand the responsibility of the trust the user is placing in them.

**Moral Values in Communicating and Accessing Information**

Information technology has forced us to rethink a simple notion of privacy into more complex theories that recognize both the benefits and risks of communicating all manner of information. The primary moral values of concern are privacy, ownership, trust and the veracity of the information being communicated. Who has the final say on whether or not some information about a user may be communicated? Who is allowed to sell your medical records, your financial records, your friend list, your browser history, etc.? If you do not have control over this process, then how can you claim a right to privacy? It follows that if we care about privacy, then we should give all the control of access to personal information to the individual. Most corporate entities resist this notion, as information about users has become a primary commodity in the digital world, boosting the fortunes of corporations like Google or Facebook. There is a great deal of utility that each of us gains from the services of internet search companies. It might actually be a fair exchange that they provide search results for free based on collecting data from individual user behaviour that helps them rank the results. That is, each user tacitly agrees to give up some privacy whenever they use the service. If we follow the argument raised above, that privacy is equivalent to information control then we do seem to be ceding our privacy little by little.

Information security is also an important moral value that impacts the communication and access of user information. If we grant the control of our information to third parties in exchange for the services they provide, then these entities must also be responsible for restricting the access to that information by others who might use it to harm us. With enough information, a person’s entire

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identity might be stolen and used to facilitate fraud and larceny. The victims of these crimes can have their lives ruined as they try to rebuild their credit ratings and bank accounts. This has led to the design of computer systems that are more difficult to access and the growth of a new industry dedicated to securing computer systems.

Assuming we are justified in granting access to some store of information that we may be in control of, there is a duty to ensure that that information is useful and accurate. You must have experienced that not all searches are equal and it matters which search provider you use. All searches are filtered to some degree in order to ensure that the information the search provider believes is most important to the user is listed first.

If we are told a link will take us to one location on the web and yet when we click the tab we are taken to some other place, we may feel that this is a breach of trust. This is often called "clickjacking" and malicious software can clickjack a browser by taking the user to some site other than the one expected; it will usually be rife with other links that will further infect your machine or sites that pay the clickjacker for bringing traffic to them.

Lastly, we must address the impact that the access to information has on social justice. Information technology was largely developed in the Western industrial societies during the twentieth century. Certain societies and social classes have little to no access to the information easily available to those in more well off societies and in developed nations, while some of those who have some access, have that access heavily censored by their own governments. This situation has come to be known as the "digital divide," and despite efforts to address this gap, it may be growing wider.

**Moral Values in Organizing and Synthesizing Information**

In addition to storing and communicating information, many information technologies automate the organizing of information as well as synthesizing or mechanically authoring or acting on new information. Norbert Wiener first developed a theory of automated information synthesis which he called Cybernetics. Wiener argued that, while this sort of technology could have drastic moral impacts, it was still possible to be proactive and guide the technology in ways that would increase the moral reasoning capabilities of both humans and machines (Bynum 2008).

Machines make decisions that have moral impacts. Increasingly, machines make important life changing financial decisions about people, without much oversight from human agents. Whether or not you will be given a credit card, mortgage loan, the price you will have to pay for insurance, etc. is very often determined by a machine.

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22larceny–stealing, 23malicious–full of ill will, 24rife–widespread25censored–deleted as objectionable, 26digital divide–an economic inequality between groups in terms of access to, use of, or knowledge of ICT, 27Cybernetics–replacing human control functions with mechanical ones, 28drastic–severe, 29proactive–preparing for, 30oversight–error, 31mortgage–pledge property or other assets as security.
Machine learning and prediction is based on complex logic and mathematics. This complexity can result in slightly incorrect prediction at times. It might interpret the data of someone’s friends and acquaintances, his or her recent purchases, and other social data, which might result in the mistaken classification of that person as a potential terrorist, thus altering that person’s life in a powerfully negative way (Sullins 2010). It all depends on the design of the learning and prediction algorithm, something that is typically kept secret.

**The Moral Paradox of Information Technologies**

Several of the issues raised here, result from the moral paradox of information technologies. Many users want information to be quickly accessible and easy to use and desire that it should come at as low a cost as possible, preferably free. But users also want important and sensitive information to be secure, stable and reliable. Maximizing our value of quick and low cost minimizes our ability to provide secure and high quality information and the reverse is true also. Thus, the designers of information technologies are constantly faced with the task of making uncomfortable compromises.

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Abstract:

Dr. Walter F. Stromer (1920 - ) served as a professor of speech communication at Cornell College. He was visually challenged. The following is an address he delivered at a conference for the parents of students at the Indiana School for the Blind. After reviewing how disabled people have been treated throughout history, Dr. Stromer noted that employment of the physically challenged is still a major problem. He also remarked that it should not be assumed that the physically challenged are unhappy. Given a little independence and a little faith, Stromer asserted, he had confidence that the physically challenged, in particular the visually challenged children of those present at this conference, could have successful careers and lead rewarding lives.

WHEN I was told that the title of this talk was to be "The Future Is Now," I was puzzled. On second thought, I decided that this was a topic I could live with and that it expresses something which I truly believe. I feel strongly that we should learn from the past and that we have a responsibility to those who come after us, but that the most important task for us is to live this day and this moment to the best of our ability.

Since many of you here are parents of blind children, I want to talk first about what has been done in the past for the blind and other handicapped. Then I want to make some tentative suggestions that may be of help to you in the future, which begins now.

Those wonderful Greeks of twenty-five hundred years ago, to whom we owe so much, used to put defective babies in clay jars beside the road and let them die. In Rome such children were put into wicker baskets and put out on the Tiber River, to be swept away and drowned somewhere downstream.

These earlier ancestors of ours were not entirely lacking in compassion; but, they were often in real danger of being exterminated by famine or flood or marauding enemies, and survival of the group had to be put ahead of the weakest members who could not help themselves. Caring for the handicapped, as we know it, could not really take place until societies became somewhat stable and had some surplus food and some leisure time for some members.

Lack of resources was not the only factor that kept society from humane treatment of its disabled members. Attitudes were also involved. Epilepsy was once thought to be caused by the moon. To be moonstruck was to be deranged or insane. What we call mental illness was once attributed to possession by demons. Blindness and other conditions were connected with sin, as when the disciples asked Christ, about the blind man, "Who sinned, this man or his parents?" As long as the causes of disability are thought to be supernatural, either godly or satanic, the only cure will have to
be supernatural, such as prayers, incantations or exorcisms; but, not much will get done at the local human level.

Slowly attitudes began to change. In the 4th century A.D., a Christian bishop urged compassion for the retarded. In the 9th century in Baghdad, the Caliph ordered that those getting out of hospitals should be given a sum of money to tide them over until they could go to work.

We know that there are between 30 and 40 million disabled persons in this country and about 450 million in the world. Just the fact that we can count them, even approximately, is a mark of our progress. In the Middle Ages young children were not even counted in the census because it was assumed that most of them would die by the age of twelve. Why bother counting?

Another indication of concern and our openness to the subject is the fact that there are 120 organisations for the disabled. There are more than 130 wheelchair basketball teams. A totally deaf woman holds the world speed record for driving a vehicle on land. The President of Hofstra University is a man with cerebral palsy. Recently a young blind woman was involved in a down-hill skiing competition in Switzerland, while two other blind skiers and four sighted companions set out to ski across Lapland.

In the area of entertainment, we have had the play "Butterflies are Free", about a blind young man, and "Whose Life Is it, Anyway?" about a quadriplegic veteran. The movie "Inside Moves", deals with disabilities. The television movie, "Elephant Man," dealt with one who was grossly deformed. A retarded boy was permitted to play himself in a movie about the retarded instead of having the role played by a professional actor. From Seattle, you can rent a film about a boy who lost both legs and went on to become a football coach. In Dallas, a television station devotes several minutes each day to advertising 'available children'. These children are not for sale for immoral purposes but they are handicapped children available for adoption.

Yet with all this progress we must admit that there are still problems. Many of them are in the area of employment.

Of those who are paralysed, almost 90 per cent are unemployed. Of the blind, 70 per cent are unemployed or underemployed. Harold Krents, a graduate of Harvard Law School, and inspiration for the movie and play, "Butterflies are Free", applied to forty law firms before he got a job.

Taking it all together, the good and the bad, I think it is not unreasonable to say that if one must live as a handicapped person, this time and this place is one of the best that history has known.

Next, I would like to talk especially to those of you who are parents of blind children about some tentative suggestions as to how you can help your child and yourself. I do this with some hesitation because I knew so much more about child rearing before we had children than I do now.

One of the first things you can do is to believe sincerely that raw fish tastes good. I use this example because we have a Japanese student who has stayed with us often who assures me that raw fish is
delicious. My mind says it’s true. My stomach says, don’t touch it. It is hard for us really to believe that people can enjoy food which we consider repulsive. In the same way, it is hard for us to believe that others can be happy without all the things that make us happy. For example, people will look at one who is blind and say, “How terrible, how tragic, how miserable it must be without sight.” Yet, I can assure you from my personal experience and from contact with many blind people, that blindness need not result in constant unhappiness. Keep in mind that we have no reliable external measures of happiness, no brain scan, no blood test. About the best we can do is to ask people if they are happy. While I may be better informed on the happiness of blind people than you, still when it comes to deaf-blindness, my own reaction is very similar to yours. I find myself thinking, "How tragic, how difficult." I read recently about a man and wife, both deaf-blind, taking training at the Helen Keller Centre on Long Island. When they want to communicate, one goes to the kitchen table and pounds on it to make the floor vibrate. Then they meet at the table and if they are angry they spell words into each others hands rapidly. My reaction was, "How tragic, how inadequate, how frustrating. How much better it would be if they could shout at each other, or better still if they could see each other and make faces.” Or would it be better? Who are we to say that their way of communicating feelings or frustration is better or worse than ours? This same deaf-blind man laid tile for his basement floor; he hung paper on the walls of his kitchen, and he travels around the city by subway. Is he less happy than we are? I doubt it. Yes, he does miss out on things you and I take for granted. Is he aware of what he is missing? Yes, to some extent I am sure the deaf-blind are aware that life could be simpler and less real and do the best you can. Allow handicapped persons to do the same. If they like raw fish, let them eat it.

My next suggestion for you as parents is that you be like the character in magazine ads for Hastings piston rings years ago. They showed a picture of a big muscle man with a scrungy beard with a friendly smile, and the caption was, "Tough, but oh so gentle". That is a good motto for parents to be tough, but gentle. It is especially apt for the parents of handicapped children. Just being a parent, of any child, means that you have to be gentle and protective or the child will not survive the first few years of life. Yet, somewhere along the way, you have to be as tough as the mother bear who cuffs the cubs on the snout to let them know that now is the time to leave home and get out on their own. It will be especially hard for you as parents of a blind child to watch your child bump into things or get cut and bruised and still to sit back calmly and say, "live and learn." But handicapped children, more than others, need to have such toughening experiences if they are to grow up as sturdy oaks instead of delicate African violets. All through life, society will tend to overprotect and shelter those who are disabled. They will need a little extra measure of toughness, of assertiveness, of independence if they are to get their fair share of rights and freedoms. It may help you in learning to be tough if you will remember that most of the accidents that, after that happen to blind people are not serious, and almost never fatal. The greatest damage is always to the loved ones who watch things happen, and to the pride of the blind or disabled person.

Last winter I was hurrying to the chapel for a convocation programme. I took a short cut along a narrow sidewalk, got too far off to the left side, and got clipped just above my left eye by a tree
branch stump where it had been cut off. The branch drew blood, and I knew it. I had no more than sat down in the chapel than one of my students came along and said, "Oh, you're hurt; are you all right?" I said, "Yes," and I wanted to tell him to go away and let me suffer in silence. After chapel, I did not want to go back to the office because I knew the secretary would notice and make a fuss. I didn’t even want to go home for lunch because I thought my wife would wrap me in bandages and keep me in the house for a month. What was hurt was my pride. I had demonstrated to others that I was careless, or worse, that blind people can’t walk across the campus without bumping into things.

You can help most if you will encourage your child to be independent, to move out, to take risks. If there is a cut or a bruise, be cheerful about cleaning it up and applying a bandage and then go about your business. If you can do that, you will be saying most eloquently to your child, "I have confidence in you; keep trying."

My last suggestion to you is to believe in yourself. You are here at this conference to get help and reassurance from various experts. I am sure they have much to offer and I hope you will learn from them. Never forget that in one way you are more expert than any teacher, counsellor or psychiatrist you will ever meet. You are expert in knowing how it feels to have your life and your life blood wrapped up in a handicapped child, and to live with that investment twenty-four hours a day, every day of the year. That is very different from being a professional helper who deals with the problem for an hour a week, or an hour a day, or even six hours a day. We need professionals who can be detached and objective and sometimes we, as parents, need to learn some of that detachment of perspective. If ever the professional helpers get so detached that they forgot the depth of our feelings, please feel free to remind them that you, too, have some expertise. Some years ago, I came across a book by a French psychoanalyst, Alfred Adler. In the first chapter of his book he wrote, "When parents come to me with a problem about their child and they tell me what they have been doing, my first response is to say, 'I think you're on the right track,' because parents carry a heavy burden and they need all the support they can get." I wish I could meet that psychoanalyst and hug him and say, 'Thank you for understanding.'

I want you to learn all you can from the professionals here or wherever you are. I might even agree with them that you need to change your behaviour in some ways. I do not want you to feel that you are stupid and worthless and that you are not doing anything right. If you do that, you won’t be a good role model for your child. I want your child to be happy, but part of that will come about if your child sees you as parents who find life enjoyable and challenging. So - listen to the experts, but also trust yourself.

If I may summarise briefly, let me remind you how far we have come in a mere two thousands years, such a little time in the long history of the world. Next, believe in raw fish; that is, give handicapped people much freedom in deciding what they enjoy. Try to be both tough and gentle; and, finally, listen to others but also trust yourself. I think the greatest gift you can give your child is a zest for living, a spirit of wonder and adventure, and a confidence that the problems of life can be solved or endured.
In the words of a Chancellor, who was both a tyrant and a romantic, Otto von Bismarck, "With confidence in God, put on the spurs and let the wild horse of life fly with you over stones and hedges, prepared to break your neck, but always, without fear."

If that is a bit too romantic, let me suggest two lines from a Kipling poem. A Russian who spent seven years in Siberia said that these lines helped sustain him. "If you can fill the unforgiving minute with sixty seconds worth of distance run, yours is the world and all that's in it, and which is more, you'll be a man, my son."

**In Celebration of Being Alive**

You are sure to have heard of Dr. Christiaan Barnard who created history in the field of medicine with his attempts to transplant the human heart. In the passage that follows, which is condensed from a speech by him, Dr Barnard talks about the lesson he took from two brave youngsters about the business of living. What was the lesson?

More and more, as I near the end of my career as a heart surgeon, my thoughts have turned to the consideration of why people should suffer. Suffering seems so cruelly prevalent in the world today. Do you know that of the 125 million children born this year, 12 million are unlikely to reach the age of one and, another six million will die before the age of five? And, of the rest, many will end up as mental or physical cripples.

My gloomy thoughts probably stem from an accident I had a few years ago. One minute I was crossing the street with my wife after a lovely meal together, and the next minute a car had hit me and knocked me into my wife. She was thrown into the other lane and struck by a car coming from the opposite direction.

During the next few days in the hospital I experienced not only agony and fear but also anger. I could not understand why my wife and I had to suffer. I had eleven broken ribs and a perforated lung. My wife had a badly fractured shoulder. Over and over, I asked myself, why should this happen to us? I had work to do, after all; there were patients waiting for me to operate on them. My wife had a young baby who needed her care.

My father, had he still been alive, would have said: "My son, it's God's will. That's the way God tests you. Suffering ennobles you-makes you a better person.'

But, as a doctor, I see nothing noble in a patient's thrashing around in a sweat-soaked bed, mind clouded in agony. Nor can I see any nobility in the crying of a lonely child in a ward at night.

I had my first introduction to the suffering of children when I was a little boy. One day my father showed me a half-eaten, mouldy biscuit with two tiny tooth marks in it. And he told me about my brother, who had died several years earlier. He told me about the suffering of this child, who had been born with an abnormal heart. If he had been born today, probably someone could have
corrected that heart problem, but in those days they didn’t have sophisticated heart surgery. And
this mouldy biscuit was the last biscuit my brother had eaten before his death.

As a doctor, I have always found the suffering of children particularly heartbreaking -especially
because of their total trust in doctors and nurses. They believe you are going to help them. If you
can’t, they accept their fate. They go through mutilating surgery, and afterwards they don’t
complain.

One morning, several years ago, I witnessed what I call the Grand Prix of Cape Town’s Red Cross
Children’s Hospital. It opened my eyes to the fact that I was missing something in all my thinking
about suffering - something basic that was full of solace for me.

What happened there that morning was that a nurse had left a breakfast trolley unattended. And
very soon this trolley was commandeered by an intrepid crew of two - a driver and a mechanic. The
mechanic provided motor power by galloping along behind the trolley with his head down, while
the driver, seated on the lower deck, held on with one hand and steered by scraping his foot on the
floor. The choice of roles was easy, because the mechanic was totally blind and the driver had only
one arm.

They put on quite a show that day. Judging by the laughter and shouts of encouragement from the
rest of the patients, it was much better entertainment than anything anyone puts on at the Indiana
polis 500 car race. There was a grand finale of scattered plates and silverware before the nurse and
ward sister caught up with them, scolded them and put them back to bed.

Let me tell you about these two. The mechanic was all of seven years old. One night, when his
mother and father were drunk, his mother threw a lantern at his father, missed and the lantern
broke over the child’s head and shoulders. He suffered severe third -degree burns on the upper part
of his body, and lost both his eyes. At the time of the Grand Prix, he was a walking horror, with a
disfigured face and a long flap of skin hanging from the side of his neck to his body. As the wound
healed around his neck, his lower jaw became gripped in a mass of fibrous tissue. The only way this
little boy could open his mouth was to raise his head. When I stopped by to see him after the race,
he said, "You know, we won." And he was laughing.

The trolley’s driver I knew better. A few years earlier I had successfully closed a hole in his heart.
He had returned to the hospital because he had a malignant tumour of the bone. A few days before
the race, his shoulder and arm were amputated. There was little hope of his recovering. After the
Grand Prix, he proudly informed me that the race was a success. The only problem was that the
trolley’s wheels were not properly oiled, but he was a good driver, and he had full confidence in the
mechanic.

Suddenly, I realized that these two children had given me a profound lesson in getting on with the
business of living. Because the business of living is joy in the real sense of the word, not just
something for pleasure, amusement, recreation. The business of living is the celebration of being
alive.
I had been looking at suffering from the wrong end. You don’t become a better person because you are suffering; but you become a better person because you have experienced suffering. We can’t appreciate light if we haven’t known darkness. Nor can we appreciate warmth if we have never suffered cold. These children showed me that it’s not what you’ve lost that’s important. What is important is what you have left.