

# Law in Science Fiction

## Law and Technology: From Socialist Dystopia to Capitalist Utopia

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### 1. Science Fiction and the Dystopia of Unjust Law

In Ridley Scott's *Blade Runner*,<sup>1</sup> considered by many the best science fiction film of all time, a group of artificial humanoids, created to serve mankind, rebel against their masters and become a threat to human beings. In James Cameron's *Terminator*,<sup>2</sup> and its ensuing hit saga, a computer (Skynet) takes control of the world using robotic warriors to ensure that humanity remains subjugated to the reign of technology and the machines it creates. In a similar situation, in *2001: A Space Odyssey* by Stanley Kubrick,<sup>3</sup> the computer takes control of a space station to destroy the entire crew. In *The Matrix*, from the Wachowski brothers,<sup>4</sup> computers have converted human beings into 'batteries' to supply energy by making them live in a continuous computer-generated dream state, which is nothing other than virtual reality, akin to the computer game *Second Life*, except that it is one that is lived without our consent. In Fritz Lang's *Metropolis*,<sup>5</sup> a minority who controls the alienated masses attempts to maintain their power by creating a robot to replace Maria, a charismatic leader who represents a threat that could lead to the liberation of the oppressed masses. In George Lucas' *Star Wars*,<sup>6</sup> a dictatorial empire, under the direction of a being that is half man, half robot (Darth Vader), subjugates entire planets with technological

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<sup>1</sup> <http://bladerunnerthemovie.warnerbros.com/>

<sup>2</sup> <http://www.imdb.com/title/tt0088247/>

<sup>3</sup> <http://2001odiseaespacial.net/>

<sup>4</sup> <http://www.imdb.com/title/tt0133093/>

<sup>5</sup> <http://www.kino.com/metropolis/main.htm>

<sup>6</sup> <http://www.starwars.com/>

firepower never before imagined. In Ridley Scott's *Alien*,<sup>7</sup> an unscrupulous company on earth uses a robot and computer and sacrifices the entire crew of a spaceship in order to capture an indestructible space monster. In Steven Spielberg's *Minority Report*,<sup>8</sup> technology, coupled with the mental power of human mediums, makes it possible to convict and incarcerate suspected delinquents before they commit any crime and without granting them the right to defend themselves. In *Avatar*, another James Cameron film,<sup>9</sup> a mining company uses its technology against a tribe of extraterrestrials who, armed with bows and arrows, rise up to defend their environment and their surprising, unusual bond with nature.

The list is long (and could go on), demonstrating what is clearly the dominant tendency in science fiction cinema. In all of these films technology is presented as something evil that escapes from the control of its creator (the human being) and is used to exploit man rather than serve him. Inevitably, the conception of Law as a just ordering collapses in the face of technological domination; instead the Law becomes a tool in the service of the power that is conferred to those who control it. On more than one occasion, the entity controlling the technology is the technology itself. In this perspective, technology is a sign of unjust Law.

This vision implies several common elements:

- a. Technology is a mechanism that concentrates power. The powerful, whether they be the politically powerful (dictatorial governments) or the economically powerful (enormous, unscrupulous corporations) are the ones who enjoy technology and employ it to reach their goals.

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<sup>7</sup> <http://www.imdb.com/title/tt0078748/>

<sup>8</sup> <http://www.imdb.com/title/tt0181689/>

<sup>9</sup> <http://www.avatarmovie.com/>

b. In consequence, technology is used to threaten or limit individual rights. The inevitable result of this concentration of power is disempowering individuals.<sup>10</sup>

c. The political structures presented reveal a malevolent coalition between powerful political and economic figures who join together to exploit the weak. The alliance results in the creation of a Law that is unjust. Exploitation and weakening individual rights are the logical consequence. Moreover, particularly relevant legal institutions, such as property and contracts, are characterized such that they become part of the unjust mechanisms of oppression.

d. In the films, the “heroes” (the “good guys”) are portrayed as people who lack power and operate with very few technological resources. In order to reach their goals they are obligated to become outlaws, that is, act outside the margins of the established Law in the fight to bring about change in the oppressive legal ordering governing humanity. They are, with varying degrees of emphasis, revolutionaries or people seeking to subvert the established order.

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<sup>10</sup> The following text by Muñoz de Baena puts into a current context the vision presented in science fiction cinema: “...modern democratic states have accepted technological change as part of an impressive exercise of power. Citizens are filmed hundreds of times each day, in the street, in public buildings, in public transportation. Initiatives such as the United States Patriot Act or its British equivalent allow restrictions never before imagined on long-standing guarantees against arbitrary detention, daily states of exception, and open legitimation of soft torture on the simplistic basis of extraterritoriality. The explanation bears resemblance to science fiction: the world has changed. In general, we believe that this control is used for our good and we find peace in knowing that our constitutions protect us. Yet the control is increasing from day to day, fed back by the fear that it generates: more fear, more control; more control, more fear. Bureaucracy is also expanding to the point of superimposing itself on the State, to the point of creating a framework that ends up blurring reality from any dystopian experiment.” Muñoz de Baena Simón, José Luis. “Utopías, distopías, deicidios: El cine de ciencia ficción.” In *Derecho y Cine: El Derecho a través de los géneros cinematográficos*, Juan Antonio Gómez García (editor) Cine Derecho Tirant lo Blanch. Valencia 2008. pp. 278-279. It is interesting to note how well this vision is reflected in Terry Gilliam’s film *Brazil*, (<http://www.imdb.com/title/tt0088846/>) in which a citizen becomes a victim of persecution because of a simple bureaucratic error that, reinforced by technology, sets off the machinery of repression.

e. Related to the previous item, the films usually portray societies in which wealth and resources are poorly distributed. There are usually references to better times long past, to an age when people lived under more civilized rules with a greater degree of humanity.

f. By consequence, the vision of the relationship between Law, technology, and human development implicit in science fiction cinema is a pessimistic one in which the future holds little promise.

To synthesize, the "good guys" in these films tend to be the people who rebel against the established order, against the unjust Law, and so challenge the system and rules in vigor with the intention of toppling those who have set themselves up as authorities in apparently legitimate legal systems. In most of these films the heroes or heroines rebel against the Law, acting as outlaws who question the essence of the existing Law that they seek to delegitimize if not replace. In the end, Law is one of the enemies that must be faced. Law is one of the "bad guys."

What we find in these science fiction films is what is known as dystopia:

A dystopia, also known as antiutopia, is a perverse version of utopia in which reality is characterized by qualities that are opposite those associated with an ideal society. The term was coined in contrast with that of utopia and is principally used to refer to a fictitious society (often situated in the near future) where the consequences of the massive indoctrination and manipulation – generally carried out by an authoritarian or totalitarian State – lead to the absolute control, conditioning, or extermination of its members beneath a guise of benevolence. ...

According to the Oxford English Dictionary, the term was coined near the end of the 19th century by John Stuart Mill, who also employed the synonym attributed to Bentham, *cacotopia*, contemporaneously. Both words stem from the term 'utopia,' coined by Sir Thomas More on the Greek 'ou-topia,' or no-place, normally identified as a perfect or ideal society. Dystopia, then, is a derivation to indicate a negative utopia where reality is characterized by the opposite qualities of an ideal society. The difference between utopia and dystopia depends for the most part on the point of view of the author or, in some cases, on the

interpretation of the work's reader, who judges the situation described as desirable or not.<sup>11</sup>

Is this dystopian vision of the Law in the future justified? Does technology bring us closer to an unjust Law? That is the theme that this piece examines.

## 2. The difficult relationship between Law and Technology: Unjust Law or Irrelevant Law?

Science fiction films illustrate the complex relationship between Law and technology. In most of the films, technological progress is coupled with arrogance, abuse, dictatorship, arbitrariness, and the lack of freedom. The idea is that technology creates power and that this power will eventually escape control, turning Law into an instrument of evil, and as such must be fought.

The theme, however, transcends cinema and takes on ideological connotations in political and even academic discourse.

At the outset, Gutenberg's press was seen as a mechanism as alienating as computers and the Internet are for some people today: mechanisms that by rendering knowledge accessible to the masses distract man from his day-to-day business, causing him to become lazy and disconnected from reality. They have an addictive, noxious effect that distorts free will. Previously, man distracted himself reading books. Today he does it by googling or checking Facebook. Both have been seen as negative by a good number of people.

Many (uselessly) resist buying a cell phone or a Blackberry that they interpret as a loss of

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<sup>11</sup> <http://es.wikipedia.org/wiki/Distop%C3%ADa> (last visited March 7, 2011).

freedom and intimacy. Others consider interactive TV and video games destructive drugs for youth, predicting that such technology will ruin their futures. Advances in biotechnology are considered dehumanizing when not sinful, and that there is only one step separating us from the images of monstrous mutants or X-Men.

The conflict is then transmitted to the Law. Raised voices demand more regulation to limit the excesses of technology out of fear that, like in *Matrix* or *Terminator*, technology will take over and enslave us. In fact, the expression "class struggle" seems to have been transformed into a more sophisticated concept in which as citizens or consumers we face technological alienation similarly to how we used to visualize the struggle of workers against alienation of labor. Examples of its expression are the discussions of what needs to be done to stop global warming, the problem of genetically-modified foodstuffs, or the fight against fatty food using measures such as the prohibition of giving away toys with fast food.

In this way, the vision is usually associated with (and perhaps this is why it is employed in films) certain ideological visions that hold economic development (at least the capitalist version so closely coupled with technology) as something bad for humanity, and especially so for the poorest, who are qualified as dispossessed. Development is built on the suffering and sacrifice of certain groups in a vision that sees the economy as a zero-sum game in which one can only win if someone else loses; a vision that loses sight of exchange and the market as a win-win scenario where both parties can flourish.

In *Avatar*, for example, the mining company can only carry out its operations by annihilating the rights of the natives. As was noted in a previous work about the film:

According to a common formula, which Avatar follows, the business investment is portrayed as zero-sum, since if the invasive mining company on the planet Pandora is to make money, it must deprive the planet's natives of their land, their environment, and their future. Some win, others lose. The message is far from anything like a win-win situation where everyone involved can benefit from exchange.

It would seem that in human perception, the medium for the stories cineastes tell, multiplier effects and win-win scenarios (essential to the logic of markets) are difficult to identify as such and that directors are aware of this difficulty. There must be some theory of the masses to explain why the most moving stories are those in which the antagonists are so starkly opposed to each other that the spectator is obliged to side with one of them and take up that cause. It could reflect the need to live fantastic stories that, while realistic enough, allow us to escape from our real lives which, as we all know, have no shortage of gray skies. We prefer and we grasp more immediately games of addition and subtraction that require simpler mathematical operations, games in which one's winnings are invariably the other's losses. Justice in films tends to be redistributive, yet in real life this is not necessarily so.

Of course, Cameron has the right to do what he does. It is his right as author of the work; he is the owner of the story and is free to express his ideas in it. It is interesting that he does not need to create an extraterrestrial monster or invoke the political opposition of the moment (at one time the fearsome Soviets after the Cold War, and now the savage Arabs following 9/11) in order to create a credible villain. It is much simpler: all that is needed is a businessman, who is supposedly evil by definition. As if it could be no other way, in order to heighten the drama, the natives must be ingenuous, primitive, full of altruistic ideals, lacking in material ambitions, and closely attuned to nature through a sort of religion similar to the Force in Star Wars.<sup>12</sup>

Accordingly, in films in general and in science fiction films in particular, a common theme is that Law is unjust, or at least that it is irrelevant in the quest for justice, because in order to be just, it is necessary to go against the Law and the established order. A film that illustrates this

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<sup>12</sup> Bullard, Alfredo y Cecilia O'Neill. *Avatares para Definir la Propiedad* <http://www.elcato.org/avatares-para-definir-la-propiedad> (last visited February 26, 2011).

irrelevance with particular dexterity, although it is not a work of science fiction, is *The Secret in Their Eyes* by Juan José Campanella:<sup>13</sup>

... every time a reference is made to the legal or political system, Law becomes dysfunctional or, worse yet, irrelevant. The conundrum is only resolved because the rules that govern the process are easily broken, for if we abide by them, we are left with a case decided correctly in theory but that in actuality remains an obvious injustice. Furthermore, the ominous ending is nothing other than a denouncement of the divorce between what should be and what is; a divorce not brought on by a lack of rules, but rather by the impossibility of carrying them out in practice because of the lack of reliable legal and political actors.

In this way, the “heroes” of the story (if indeed the name can be applied to them) violate norms with the same indifferent impudence as villains. The Law does little to serve justice or to impede it. Every outcome, good or bad, is reached by going around the Law, such that it turns out to be irrelevant. If we consider it lamentable that the Law might be an obstacle in the quest for justice, the possibility that it is neutral or irrelevant in the face of injustice is even more lamentable, because it implies that nothing changes in reality when a few rules are altered.

*The Secret in Their Eyes* is an ode to the irrelevance of Law. In this sense, the film is not innovative. The dispensability of Law is a common space, a cliché frequently employed in cinema precisely because the public imaginary identifies with it. Anonymous avengers who render justice where Law fails are more common than baubles: from Rambo and Commando (Stallone and Schwarzenegger, respectively), to the replicant hunter of in Ridley Scott’s *Blade Runner*, to the glorification of the squatters who flagrantly violate private property rights in Sergio Cabrera’s *The Snail’s Strategy*, not to mention how evidence is illegally obtained in Otto Preminger’s *Anatomy of a Murder*. Even in television, the failure of Law to render justice is an ingredient that attracts spectators (think of Dexter, the serial-killer turned good guy in the popular series of the same name).<sup>14</sup>

In this sense the idea that Law is unjust or that Law is relevant is acceptable. In the end, it depends on the definition we give Law. Certainly, Law that is irrelevant is naturally unjust, and

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<sup>13</sup> <http://www.elsecretodesusojos.com/>

<sup>14</sup> Bullard, Alfredo y Cecilia O’Neill. “*El Secreto de sus Ojos*” y el Derecho Irrelevante. En <http://enfoquederecho.com/el-secreto-de-sus-ojos-y-el-derecho-irrelevante/> (last visited February 27, 2011)

Law that is unjust is in the end irrelevant in reaching its objectives. They are two sides of the same coin and cinema has exploited the perceptions generated by both of them.

Few cinematographic genres have exploited the cliché of unjust or irrelevant Law as much as science fiction. In them, technology contributes to this dysfunctionality in a brutal manner. But are the perceptions accurate? As we will see, they involve less science and more fiction. Is our future, then, more prone to utopia or dystopia?

### 3. Law, Technology, and Well-being

Taking advantage of this paper's treatment of science fiction, I propose a hypothetical exercise, one that may resemble something from science fiction. We are going to imagine we possess a time machine and can travel over 200 years back in time. Let us choose someone from that period. I propose choosing a poor person (as we will see they were much more abundant at that time than they are now). We have taken with us on our trip back in time a film that takes place in our times (21<sup>st</sup> century). To the spectator from the past the film would be the equivalent of what science fiction is to us. The spectator would see how human beings live in the 21<sup>st</sup> century. We would have to make great efforts to explain many of the things seen in the film that are for us utterly ordinary – refrigerators, cell phones, automobiles, and airplanes. Putting them before a computer, or worse yet the Internet, would, I fear, go beyond their capacity for comprehension, as they would possess no referent whatsoever to enable any understanding of the mechanisms involved in such technology. I do not even propose showing a film in which technology features prominently. I would settle for films such as *The Secret in Their Eyes*, *Forrest Gump*, or *The Milk of Sorrow*.

The film would make a much greater impression on our guest than a film like *Matrix* or *Star Wars* left on us. We would have some kind of notion of how spaceships or computers might work that in any case would be much clearer than the understanding someone from the 19<sup>th</sup> century would have of an airplane, a car, or a television.

The question we should ask our guest is whether what he sees looks more like a utopia or a dystopia. In other words, we should ask him if he sees in the film a world that bears greater resemblance to an ideal or perverse future. Keep in mind that when we watch films of science fiction, we nearly always consider the world therein portrayed as dystopias.

In truth, real life seems to categorically refute the movies and the pessimistic visions associated with technology. What actually occurs seems very distinct from what is seen in science fiction films.

As we will see, technology has been, far from an enemy of Law, its ally. This alliance has, furthermore, actually contributed to the well-being of mankind. The threats of futuristic dystopias seem very much removed from reality. Rather, everything seems to be moving in the opposite direction from what science fiction cinema suggest. Everything indicates that, at least for the past two centuries, the relationship between Law, technology, and human welfare has created a virtuous cycle producing a spiral that on balance has been positive for humanity.

Law has been a key factor in technological development. At the same time, however, technology has led to an improvement in the validity not only of Law with a capital “L,” but also of rights with a lower-case “r” (that is, individual rights). And both have resulted in an appreciable improvement in the welfare of humanity.

Steven E. Landsburg describes the evolution. In the past 200 years, mankind has created more wealth and well-being by far than during the preceding 99,800 years. The numbers back him up. Modern humans appeared on earth only 100,000 years ago. For 99,800 of those years we survived at a subsistence level with a rate of economic growth close to nil. In other words, productivity remained virtually constant. Per capita income was roughly equivalent, once inflationary effects are eliminated, to making between US\$400 and \$600 per year today. Our ancestors made do on that amount for millennia.

Then, only 200 years ago, something extraordinary happened. Per capita income in the West began to rise at the “incredible” rate of 0.75% per year, and then, in the early 20<sup>th</sup> century, at 1.5%, reaching 2.3% in the 1960s.<sup>15</sup>

Although there is discrepancy between economists concerning the precise figures, there is less disagreement regarding the orders of magnitude of evolution in the global per capita GDP. The figures for these that Maddison provided might be the most widely cited ones. From 0 A.D. until 1820 (the year chosen to mark the beginning of the Industrial Revolution), the global per capita GDP increased very modestly from US\$444 to US\$667 per year (using the value dollars had in 1990). It barely rose 50% in 1820 years. But from 1820 to 1998, it went from US\$667 to \$5,709 (again using the value of the dollar in 1990). In this period of 178 years the global per capita multiplied by a factor of ten (in less than a tenth of the time). More interesting yet, the increase is notably greater in the part of the world known as the West (United States, Western Europe, Canada, Australia, New Zealand, and Japan), where it went from \$443 in the year 0 A.D.

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<sup>15</sup> Landsburg, Steven E. *Cuanto Más Sexo Más Seguro. Una Mirada Irrelevante de la Economía*. Taurus, Pensamiento. Mexico 2007. p. 37. Landsburg bases some of his work on the piece by Michael Kremer published in Quarterly Journal of Economics entitled “Population Growth and Technological Change: One Million BC to 1990.”

to \$1,130 in the year 1820, to \$21,470 in 1998. In the recent period of 178 years, it nearly increased by a factor of 20, when in the previous 1820 years it had not even tripled. In the rest of the world (that is, the parts that were not included in Maddison's definition of the West), the figure went from US\$444 in the year 0 A.D. to \$573 in 1820, to only \$3,102 in 1988. Although the increase is significant, it remains far below the rate of growth in the West.<sup>16</sup>

The year 1820, which appears in the data as the turning point (and is why we went back 200 years to find someone to show our movie from the 21<sup>st</sup> century), marks the appearance of the modern corporation and the legal forms which enabled its development; that is, the creation of mercantile corporations that separated capital and management, the beginning of private property as we understand it today, and the most efficient methods for enforcing contracts, which will be examined later.

For these reasons, it is no exaggeration to say that the primary impetus for technological development was the creation and implementation of adequate legal institutions.

These institutions allowed for creativity to be directed into the proper channels and so make a real difference in the lives of people. This entrepreneurial leap coincides with the start of the Industrial Revolution that continues up to this day, or rather, that continues to grow in a spiral that seems impossible to stop.

So there is a consensus that technological development triggered the human development and the increase in well-being of the past two centuries. This explains the impressive jump in the

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<sup>16</sup> Maddison, Angus. "Growth Accounts, Technological Change, and the Role of Energy in Western Growth," in *Economia e Energia*, secc.XIII-XVIII, Istituto Internazionale di Storia Economica "F. Datini" Prato, Le Monnier, Florence, April 2003.

spiral of economic growth per capita. And it is, in turn, as we will soon see, a certain conception of Law that triggered the development of technologies.

Voices have been raised, of course, claiming that this is untrue, and that in fact technology is leading us to world similar to what we see in films of science fiction. These critics, however, do not have any basis in empirical evidence to support their views.

To give the reader a sense of the significance of an increase in growth as apparently trivial as the one that set off the Industrial Revolution, let us employ some mathematics. If someone makes US\$50,000 today, in 25 years (just one generation) at the rates of growth in gross domestic product (GDP) previously indicated, the income of that person's children will have almost doubled, and in another generation, their grandchildren's income will be more than triple theirs. If we make \$50,000 today, our grandchildren will make around \$150,000 per year (in dollars of equivalent purchasing power). Believe it or not, in 400 years our descendants will be making a million dollars a day (much more than Bill Gates makes), with a standard of living equivalent to what someone would have today with that amount.<sup>17</sup> Furthermore, this is assuming that growth rates will remain constant at current levels, which, according to the empirical evidence, is not certain, as they tend to rise exponentially.

These figures notwithstanding, because of the spirit that animates the pessimism one finds in films of science fiction, it is also probable that our descendants will believe, like many today, that past times were preferable and that their great-great-grandparents had better lives.

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<sup>17</sup> Landburg, op cit, p. 38.

In the last 150 years of progress driven by technology, the quantity of food consumed per capita has doubled, that of goods increased by a factor of 100, that of services by a factor of 6.<sup>18</sup>

It is not, however, only a question of income. It is a matter of real well-being. The most common criticisms are that more economic growth does not imply real improvement in well-being. Or that more growth does not mean less poverty as much of the wealth can be concentrated in certain groups at the expense of others, producing more poverty. But empirical evidence again indicates the opposite is true.

Life expectancy seems a better indicator of well-being than simply using figures for the growth of global per capita GDP. As Rosenberg and Biedzell have put very well, moving from poverty to wealth is in the end moving towards greater well-being. In this sense, death is the ultimate threat, and the shift from poverty to wealth is in reality a way for us to put distance between ourselves and death. Indicators such as life expectancy and infant mortality thus seem more accurate. Malnutrition and famine come next on the list. In third place are reducing epidemics and disease. In fourth place, the lack of adequate education and illiteracy.<sup>19</sup> In all of these aspects the changes for humanity have been positive and the available data exhibits substantial improvements in the past two centuries.

Life expectancy went from 25 years at the beginning of the 18<sup>th</sup> century to 72 years for men and 74 for women in the 1970s. Infant mortality fell from 250 per thousand births to around 20. The average age at which someone loses a parent has gone from 14 years to 44.<sup>20</sup> The

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<sup>18</sup> Rougier, Louis. *El Genio de Occidente*. Unión Editorial. Madrid, 1998. p 218.

<sup>19</sup> Rosenberg, Nathan y L.E. Birdzell Jr. *How the West Grew Rich: The Economic Transformation of the Industrial World*. Basic Books, Inc., 1986. pp 3-4.

<sup>20</sup> Rougier, op cit, loc cit.

differences can be accounted for by improvements in medical science, by the availability and costs of alimentation, by improvements in sanitation (drinking water, sewage treatment), by improvements in education, etc. And all of these factors are related to the technology available.

Their impact is not only seen in terms of well-being, but also in the status of individual rights and even in the status of the rights referred to as social rights. For example, the increased productivity due to technology has made it possible to adopt many labor rights. People work less today, and in spite of that, the world produces more and we live better. Without increased productivity, such labor rights would have led to a serious decline in well-being. Or, in other words, society would not have been able to cover the cost of conceding the labor rights we currently enjoy.

100 years ago, the work week in the United States was 60 hours long. Today it is under 35. 100 years ago, only 6% of industrial workers had vacation time. Today 90% do. 100 years ago, 100% of men entered the workforce while still adolescents. Today it is close to 0%. 100 years ago, 26% of male workers retired at 65 years of age. Today almost 80% do.<sup>21</sup> Although the figures differ from country to country, in the vast majority of them (including Latin America), there have been improvements in the past 100 years.

The creative inventions and technology that has made it into our homes – washing machines, vacuum cleaners, hot water, electricity, heating, telephones, microwave ovens, and so forth – have radically reduced the amount of time we must spend working and have increased our well-being, our opportunities, and our incomes. As Landsburg commented, at the beginning of the 20<sup>th</sup> century, domestic chores included lugging 7 tons of coal and 34,000 liters of water

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<sup>21</sup> Landsburg, op cit, p. 39.

every year.<sup>22</sup> Today, a good part of the world's population is spared these activities, and as a result these people (particularly women who devoted their lives to housework) have been able to spend time to study and leave home for work, work that, unlike domestic chores, is remunerated. This has helped increase family income and put into a practical perspective the rights associated with equality.

Thus, most people did not have running water, sewage systems, or electric energy a century ago, nor could they drive to work or much less travel by plane. 100 years ago, the average housewife spent 12 hours a day washing clothes, cooking, cleaning, and ironing. Today it would only take whoever is in charge of such tasks 3 hours. The possibility of doing the housework and working outside the home at the same time was impossible a century ago. Today it is more and more common. Without doubt, technology has contributed to reducing the inequality between men and women for work opportunities.

Labor productivity has multiplied by factors of ten. Just estimate the number of reports and briefs a lawyer can produce in one month thanks to the word processor and Internet access, without even factoring in the benefit of being able to commute by car or airplane, to communicate with cell phones, or to carry one's email about in one's pocket thanks to the Blackberry.

Merely for the purpose of providing a fuller example, let us examine more closely the effect a cell phone can have. Four years ago in Peru, only one of every four districts had cell phone service. Today more than 82% of the districts have it and 41% of the families in rural areas claim to have access to a cell phone. As the economist Richard Webb observes, "The

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<sup>22</sup> Landsburg, op cit, p. 39.

subversive power of the cell phone in rural areas is also economic. Now, before buying or selling anything, peasants can verify market prices and even employ marketing techniques. A study carried out by Diether Beuermann shows that access to cell phones has improved prices for rural populations, resulting in increases of income of 10% and greater.”<sup>23</sup>

The explanation is not complicated. One of the effects of technology is a decrease in the cost of doing things. A cell phone puts in the hands of a peasant the ability to communicate over great distances whose cost in dollars can be measured in the tens. A few decades ago, the cost of an equivalent capacity for communication was measured in the hundreds or thousands of dollars. Reducing the costs of communication reduces transaction costs and as a result the number of commercial operations increases, which produces increases in quantity and quality.

As Rosenberg and Birdzell aptly put:

The real point, not often recognized but essential to understanding why the benefits of Western growth were so widely diffused, is that the West’s system of economic growth offered its largest financial rewards to innovators who improve the life-style not of the wealthy few, but of the less-wealthy many.<sup>24</sup>

As these authors explain, although innovative business practices made one group extremely rich, they also benefited the lifestyles of the least well-off. Innovation centered on making products cheaper and more accessible. Textile factories produced lower quality material, but a very much lower price. The enormous fortune in auto-making was made by Henry Ford with his cheap vehicles, not by Henry Royce with his luxury ones.<sup>25</sup> The pattern is applicable in virtually every industry, from entertainment (television and cinema), to cell phones, as well as computers, food,

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<sup>23</sup> Webb, Richard. *Revolución Rural*. In *Diario El Comercio* <http://elcomercio.pe/impresa/notas/revolucion-rural/20100111/395356> (last visited March 7, 2011).

<sup>24</sup> Rosenberg y Birdzell, op cit, p. 27.

<sup>25</sup> Rosenberg y Birdzell, op cit, p. 27.

electro domestic appliances, and almost every other imaginable product or service. Today, success in the market is determined by reaching the masses, not by reaching the richest.

Reducing costs generates precisely the same effects that egalitarian theories seek to occasion; namely, placing in the hands of those who have the least resources that which formerly was only available to the wealthy. In this sense, contrary to what is shown in science fiction movies, technology does not concentrate power, but rather democratizes it. It provides greater individual empowerment. Today the average human being can do many more things than was possible 200 years ago.

This explains why someone with Internet access today can access information that in the past was only available to people who could pay for it. Censoring free expression has become more difficult because technology has made information affordable. Transportation technology has cheapened access to products and increased the mobility of labor. In fact, phenomena like Wikileaks and its repercussions for government transparency or the effect of Facebook and social networking in Arab countries illustrate the capacity of technology to distribute power into the hands of many people. And having more power gives them greater chances to exercise their political, social, and economic rights.

That is why there is nothing odd about the claim that technology has helped democratize the world and contribute to greater enjoyment and validity of basic rights. Today, citizens can use technological means to evade censorship and obtain reliable information about their governments. At an affordable cost. It has become much more difficult to convince citizens who live under political and economic dictatorships that their lives are better than those who live in countries where there is more freedom. It is much more difficult to carry out fraudulent elections

or restrict the organizational capacity of movements for greater democratization. Corruption has become a business that is much easier to detect. The effect produced by technology is precisely the opposite of that found in films of science fiction. Technology, far from producing dictatorships, has played an important part in producing democracy. The Internet and cell phones would much more likely be enemies of Darth Vader than allies.

All of this has had an enormous effect on the reduction of poverty; the poverty that the enemies of market growth claim has increased in the past decades, a claim made without any numbers to back it up. Using the standards currently in place for the measure of poverty, a century ago 90% of the world's population was poor. Today the figure has dropped to less than 30% or 20%, or less, depending on the country and the definition of poverty employed.<sup>26</sup> And even though there are notable differences between countries, in virtually all there has been improvement in terms of reducing poverty levels.

The differences lay in the institutional frameworks and in the role these have played in the creation of technology and spreading the positive consequences of it. There are countries which have seen much more beneficial improvements than others. But the vast majority have still made improvement. A good example of a country that has improved, albeit to a lesser degree than many others, is Brazil:

In the first place, we should note that Brazilian success in raising per capita real income is not particularly distinguished. Per capita income increased about 14 fold from 1500 to 1998 which is about the same as the Latin American average, and better than the record in Eastern Europe, most of Asia and Africa. But in 4 new countries which are North European offshoots (USA, Canada, Australia and New Zealand), per capita income increased nearly 66 fold from the same starting

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<sup>26</sup> Rosenberg y Birdzell, op cit, p. 6

level as Brazil. Brazilian income per head is about a fifth of what it is in these 4 countries.

The countries of Western Europe have increased their per capita income 24 fold since 1500, and their average level is more than three times as high as in Brazil, even though they have operated with less abundant natural resources, and have had their development interrupted by major wars.

The experience of some countries within Asia also strongly suggests that Brazil could have done better. Japan has increased its per capita income by 39 fold since 1500 and 28 fold since 1870 (when its level was below that in Brazil). Japanese per capita income is now above that in Western Europe, and more than 3.5 times that of Brazil.<sup>27</sup>

Bringing everything together, if we could tell someone, someone poor, a story or, better yet, shown them a movie that pictured the world as it is today, that person would find our world much more similar to a utopia than a dystopia. Furthermore, that person would very likely distrust the veracity of the images shown them and refused to believe that such a world (the one we live in now) was possible.

#### 4. Why the Future (and the Present) Contradict the Pessimism of Science Fiction Cinema? From Dystopian Socialism to Utopian Capitalism.

How did the West manage to obtain such results? Why do the pessimistic predictions fail to materialize? No country accomplished such progress through abrupt, radical changes. No country has ever grown 50% in a year. The successful countries grew gradually, continuously, and with stability, at rates that appear relatively modest and rarely surpass single digits in one year. None expanded in acrobatic leaps, but rather through the accumulation of small gains and a multitude of individual efforts to achieve more.

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<sup>27</sup> Maddison, Angus. *Brazilian Economic Performance Since 1500: a Comparative View*. En [http://www.ggd.net/maddison/ARTICLES/Brazil\\_500.pdf](http://www.ggd.net/maddison/ARTICLES/Brazil_500.pdf) (Revised March 7, 2011).

The apparently structural pessimism that follows us and makes us think that we are worse off is refuted, as we have seen, by hard numbers and data. The pessimism implicit in the dystopias portrayed in science fiction cinema is more fiction than science. The world has never been better off than it is now and the world has probably never had a more promising future. We tend, however, to emboss the past, criticize the present, and condemn the future.

Unfortunately, we tend to forget the path we took to get to our present state and we also forget what the lessons implicit in this evolution from the past tell us about our future. Rosenberg and Birdzell phrase it well:

If we take the long view of human history and judge the economic lives of our ancestors by modern standards, it is a story of almost unrelieved wretchedness. The typical human society has given only a small number of people a human existence, while the great majority have lived in abysmal squalor. We are led to forget the dominating misery of other times in part by the grace of literature, poetry, romance, and legend, which celebrated those who lived well and forget those who lived in the silence of poverty. The eras of misery have been mythologized and may be remembered as golden ages of pastoral simplicity. They were not.<sup>28</sup>

How can the change be explained? Economists have not managed to associate the spurt described with the appearance of any political state, not, in any case, if “political state” is defined as central planning. As regards this aspect, the models of socialism or other form of government-controlled economy appear to lead not to extraordinary growth, but rather to societies with lower degrees of well-being and democracy, ones that more closely resemble what is seen in science fiction cinema.

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<sup>28</sup> Rosenberg y Birdzell, op cit, p. 4.

Nor has it been possible to associate the spurt with public policies meant to promote growth. What can be seen at the beginning of the 19<sup>th</sup> century is far from a statist world of planned economies, at least in the West. At the time that world was better characterized by the end of mercantilism and breaking up arrangements between the guilds and the state that limited competition. It is a world better characterized by the dismantling of state privileges in certain sectors.

On the contrary, the eruption of the industrial revolution seems to have more to do with state inaction in specific areas, such as for example contracts. Its onset is more related to what we call today economic freedom.

Governments are not the cause of slow but sustained, constant growth. The sole common factor in successful attempts are the creation of adequate institutional frameworks that liberate businesses so that they may stimulate growth through creativity and innovation. This liberation has long been associated with the development of technology. Every increment in GDP corresponds to millions of successful, creative acts of entrepreneurship, thought out decisions that are well executed, decisions that represent improvements in public service and originate in the citizens themselves, as individuals or organized into corporations. In all of them, an essential component has been the creation or use of technology. The number of such acts, in turn, can be explained in terms of legal and institutional frameworks that encourage them.

If all this had been achieved by political leaders or government policies, we would consider it be one of the greatest accomplishments of humanity in all history. As those responsible, however, are millions of entrepreneurs and business people, most of whom are silent

and anonymous, they are easily forgotten, so we tend to see the effects of creativity and technology as something as natural as the air we breathe, not as products of human labor.

If this is true, why is it is technology in science fiction cinema and popular opinion so often associated with a pessimistic view of the world in which Law has been co-opted by powerful figures (usually capitalists) who seek to exploit it to subjugate innocent, naive people so we become anonymous and lost in the docile masses?

It would seem that psychology and economy, for reasons that are not easy to understand, consider people to be pessimists. We remember every past age as “golden” even though practical experience shows the opposite was true. We love reading prophecies predicting the end of the world. It does not matter if the text in question is the Bible, or from Nostradamus, or from the International Monetary Fund. We never ignore announcements of impending catastrophes and so have woken up many a morning, when the world should have ceased to exist, acknowledging that the prediction was wrong and that we could go on living. Likewise, it seems we are more disposed to believe in dystopias than in utopias.

A great number of prophecies in a great variety of types (scientific, esoteric, religious, etc) populate the Internet and the front pages of newspapers. All have something in common: none have ever come true. Nor does it seem strange in public opinion to associate with technology the approaching calamities that will supposedly end the world as we know it. The films cited at the beginning of this piece clearly illustrate this. In those movies, technology has done away with humanity as we know it. Only a few decades ago, we all sat waiting for nuclear war (a technological menace) to finish us off. It did not happen.

Today, since the end of the Cold War, we have replaced atomic missiles with a new menace derived from technological development: the global warming that will supposedly convert the world into a living hell. In these cases, Law is not only assumed incapable of allowing us to avoid disaster, but is even considered an accomplice of the catastrophe for guaranteeing property rights and the sanctity of contracts, for example, as mechanisms that enable a small privileged group of people to make supposedly irresponsible use of technology to subjugate or annihilate the majority.<sup>29</sup> The conception of Law as unjust or irrelevant can be seen here.

Why does this paradoxical pessimism that flies in the face of the good things that we enjoy every day even exist? Why do we pay so much attention to threats that never materialize?

The best historic example of this inexplicable pessimism is found in the economist Thomas Malthus. His pessimism is perhaps one of the most important reasons for his fame. In the 19<sup>th</sup> century he predicted that, given the geometric progression of population growth rates and the arithmetic progression in the capacity to increase food supply, we would experience total famine and the end of humanity because the amount of food available could not keep up with the growing number of mouths to feed. Malthus thus wrote something that could have been used as

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<sup>29</sup> Just for the purposes of providing some examples, in 1997 *The Economist* listed some of the catastrophic predictions that never came to pass:

- In 1865, Stanley Jevons said England would run out of coal.
- In 1914, the United States Bureau of Mines stated that the U.S. oil reserves would run out in 10 years.
- In 1939 and again in 1951, the U.S. Department of the Interior said the U.S. would run out of oil in 13 years.
- In 1972, the Rome Club published “Limits to Growth,” in which it was held that the total oil reserves amounted to 550 billion barrels, which would only last to the end of the decade. But at the end of the 80s, there were still reserves. In fact, we consumed 600 billion barrels between 1970 and 1990, at which point the reserves were estimated at 900 billion barrels, without counting the deposits in Alberta that contain more than 550 billion barrels.

the inspiration for the script of a hit science fiction movie or documentary like Al Gore's *An Inconvenient Truth*.<sup>30</sup> It might have given us, *The Night of the Living Hungry*.

Malthus' prediction, one of the most famous ones because of its supposed basis in science, never came true.

Steven E. Landsburg discusses Malthus' error. He refers to a certain Baxter (an everyday ordinary man) who decides to have six children in order to solve the problem of world population. Why could having more children help combat the problem of overpopulation? Baxter's reasoning was simple: people solve problems and so the more people there are, the more problems can be solved.<sup>31</sup>

The question then becomes, how could Malthus, a reputed scientist, make such a mistake and what did Baxter, a mere John Doe, do right?

Discovering the source of Malthus' error turns out to be easy; it is directly related to misunderstanding the role of technology. Malthus' reasoning did not take into account the existence of creativity and innovation. This led to three mistakes.

The first was failing to understand that creativity is an attribute that only human beings possess. No other creature in nature has the capacity to create something new. No animal has been able to create technology. And no animal is capable of transforming the environment.

In a world with twice as many people, there would be twice as many chances of geniuses, or double the odds of highly creative people. This means twice the chances for new ideas and,

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<sup>30</sup> <http://www.imdb.com/title/tt0497116/>

<sup>31</sup> Landsburg, Steven E. *Who Shall Inherit the Earth? Our obligation to the unborn.* <http://www.slate.com/id/2038/> (visited February 27, 2011).

therefore, twice the chances of developing new technologies. Good ideas will solve problems such as, for example, producing food for more people, finding a solution for global warming, communicating among ourselves better to spread these ideas and put them to practice, multiplying and improving them.

The second mistake in Malthus' calculation is that, actually, twice as many creative people does not mean twice as many good ideas, but rather many more. Malthus not only forgot about creativity but also failed to see the benefits of corporations. Two creative people can produce more than twice the amount of ideas as one, simply because the improvement in the number of ideas that collaboration enables creative people to develop ideas is follows an exponential pattern, not a linear one. Collaboration creates synergies and that boosts creativity. Here the role of the Law in creating adequate institutional frameworks is obvious. The existence of legal entities and binding contracts favors collaboration, which in turn increases the impact of creativity. Within a single business, creative collaboration is often hindered by rules that make it potentially disadvantageous to share ideas because they are liable to be claimed by others. Contracts help create certainty which reduce this risk. Thereafter, through the use contracts between other businesses, or with consumers, creativity and technology combine over and over again limitlessly.

The third mistake consisted of forgetting that creativity not only benefits the creator or the enterprise where the creator works. As Thomas Jefferson said, having a creative idea is like

lighting a candle (today we might say a spotlight): once lit you cannot prevent the light from letting everyone else in the room see.<sup>32</sup>

Ideas generate externalities. There are positive externalities that are produced when what is communicated is a benefit. A beautiful woman or a handsome man produce benefits for many people who see them, but only they assume the costs of maintaining their appearance. The creators of Google and the television, or the cell phone, have produced much more benefit for others than they themselves have obtained from their inventions.

A creative person is not unlike the beautiful woman or handsome man: their ideas benefit us and they really cannot prevent us from enjoying them. Their ideas spread and the effects multiply limitlessly, like the candlelight that allows everyone in the room to see, not just the person who lit the candle. To put it curtly, the social benefit of a single innovative idea goes far beyond the marginal benefit that the creator receives.

So, specific legal institutions, technology, and entrepreneurial creativity were what Malthus failed to take into account.

In moments when people tell us about economic crises or the effects of global warming that proclaim catastrophes similar to those Malthus predicted, it is helpful to remember that such prophecies forget the capacity of legal frameworks, technology, and corporate creativity to overcome our problems.

## 5. The Virtuous Cycle of Law and Technology

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<sup>32</sup> Letter to Isaac McPherson, August 13, 1813 (Peterson, 1988, pp. 604-05), cited by Cole, Julio. *Patentes y Copyrights: Costos y Beneficios*. Originally published in *Libertas*, No. 36 (May 2002): 103-42. [www.economia.ufm.edu](http://www.economia.ufm.edu). (Visited August 4, 2004)

From this perspective the relationship between Law and technology seems much friendlier and beneficial to general well-being than what we are used to believing and, especially, to what we see in science fiction movies. If this is accurate, then the view of Law (or at least a certain type of Law) as unjust or irrelevant does not reflect its genuine role in the creation of a more just society with greater well-being. If this role was reflected in science fiction cinema then the scripts would be quite different (and possibly less successful at the box office). Law has contributed to technological development and, in turn, technological development has resulted in an improved Law; it has been a mutually beneficial relationship for both. Let us start with the contribution of Law to technology and development.

Innovation and technological development are primarily products of incentives that drive creators to develop new ideas and their practical applications. Yet, as we have already said, ideas are, in Jefferson's analogy, light that illuminates the path of all. The positive externalities reduce incentives when they make it unlikely that creative people benefit fully from their creations.

At the same time, creative enterprises require capital and investment. But why would an investor give their money to someone on the basis that they claim to be creative? What if they do not come up with any ideas – how does the investor recuperate their money? As a result, investors see a risk in giving money to creative people and creative people are afraid they might not enjoy the benefits of their creative labor.

This dilemma is skillfully described by Douglas North and Robert Paul Thomas when they explain that it is important to be aware of the difference between the quantities of inventions that are produced when positive externalities of creativity can be internalized and when they are not. Innovations has historically occurred without property rights or enforceable contracts. But

the kind of innovation necessary for sustainable rising development only occurs when the cost or risk of lost are reduced with regards the expected returns.<sup>33</sup>

A series of legal/institutional changes led to increased specialization in the labor market and a greater distribution of risks. A creative genius without capital could make use of the capital of wealthy people who lacked creativity. Because of the protection offered by the limited liability of corporations, people were willing to invest in businesses whose innovative management they did not control, thus reducing the risk to the amount of capital contributed without risk to the rest of their estates. This enabled accelerated growth in capital markets, by virtue of which investment were made possible that led to not only scientific progress, but also the practical applications of those scientific advances, or in other words, what we call technology today.

This required not only basic legal institutions, such as property and contracts, legal entities and limited liability of corporations, but also limitations to the intervention of the State in economic decisions, as Rosenberg and Birdzell explain:

Our general conclusion is that the underlying source of the West's ability to attract the lighting of economic revolution was a unique use of experiment in technology and organization to harness resources to the satisfaction of human wants. The key elements of the system were de wide diffusion of the authority and resources necessary to experiment; and absence of more rudimentary political and religious restrictions on experiment; and incentives which combined ample rewards for success, defined as the widespread economic use of the results of experiment, with a risk of severe penalties for falling the experiment.

The experiments embraced not simply the abstract creation of a new product or service or a new organizational device, but also the testing of the product or service by actually offering it for public use, and the organizational device by

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<sup>33</sup> North, Douglas y Robert Paul Thomas. *The Rise of the Western World: A New Economic History*. Cambridge University Press, 1973, p. 154.

using it in active enterprises. This type of experiment required an economic sector with autonomy from political intervention, in which experiment could be tried and results used with little outside interference.<sup>34</sup>

For their part, property rights and their effective protection (which includes the implementation and improvement of public registers, the creation of non-possessory guarantees, and improvements in the mechanisms for protecting property) all contributed to greater capacity for the investors to internalize the costs and benefits of their investments more efficiently.

The evolution of contract law and state enforcement of obligations reduced transaction costs, allowing greater spread of knowledge, but also of its practical applications.

For these reasons, the motor of creativity that generates technology stems from, in principle, a series of minimum legal definitions that can be identified in the countries that are considered developed and that are, in turn, those that produce the most technological innovation. In the first place, they demonstrate a better definition of the property rights that enable businessmen and everyday citizens to bear the costs of their actions and enjoy the benefits of their effort. By better defining property and attaining greater monetary circulation as well as depersonalizing such circulation (through investment in stock), great quantities of capital can be gathered that permit the scale of investment required for modern technological innovation. That there would be enough capital for research in medicine or high technology without capital markets and a market structure that encourages competition is unimaginable. In order to collect the necessary capital, the creation of legal entities, and in particular limited liability corporations, separates the risk inherent in investment from that inherent in management, making it possible for capitalists without business acumen to associate with creative people and skilled managers

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<sup>34</sup> Rosenberg y Birdzell, op cit, p. 33.

who lack capital. This enables business to bear risks that in previous legal regimes were unsupportable. This institutional shift came to age during the Industrial Revolution.

At the same time, the reduction in transaction costs that was made possible by a better legal definition of compliance mechanisms for agreements and in particular the creation of effective legal mechanisms for the arbitration and enforcement of obligations led in turn to greater efficiency and standardization of exchanges, which propelled the development of new technology to satisfy new demand.

Yet the relationship between Law and technology goes both ways, and a virtuous cycle was created that further contributed to development. Technology allowed for better definition of property rights through improved systems for detecting violations as well as improved definition and enforcement of those rights.

For example, the creation of public registries (which have in turn become more technologically sophisticated thanks to computers, land registry systems, and GPS) have helped improve the definition and protection of property rights.

Relatively simple technologies such as the discovery of barbed wire made true property rights possible during the conquest of the American West, which reduced conflicts and improved productivity.<sup>35</sup>

Enrique Pasquel illustrates, with concrete examples, how technology has been reducing the costs of creating exclusive rights, which has enabled people to start thinking of whales, wild

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<sup>35</sup> Anderson, Terry y P. J. Hill. "The evolution of property rights: A study of the American West." *Journal of Law and Economics*. Vol. 18, No. 1, Abril 1975, pp. 163-179.

animals, streets, water, the atmosphere, and other goods in terms of property. This was unthinkable a few centuries ago. Electronic or satellite tracking systems are capable of privatizing roadways such that users are charged at the end of the month for the roads traveled by their automobiles. This is only possible because of modern technology. Technology can be used to track whales and become one's owner. Pasquel's examples demonstrate that property is created by establishing a relationship between the marginal cost of asserting the right and the marginal benefit of ownership. Technology, by reducing the enforcement costs of property, reduces the marginal cost and increases the marginal benefit. The door is thus opened to use this right to create incentives that avoid environmental pollution and wildlife extinction.<sup>36</sup>

In addition, in the world of contracts, transaction costs have dropped in certain transaction to levels nearing zero, thanks to the Internet and electronic contracting. Today it is possible to buy a book a thousand miles away with a simple click on the mouse. These benefits do not only improve economic markets, but also the political markets, as they provide us with better mechanisms for creating greater government transparency with the information available. Technology such as the printing press, the radio, the television, Internet, or other similar devices allow for improved enforcement of the legal rules that make it possible to develop democratic institutions, protect citizens from electoral fraud or corruption, and give real force to the freedom of expression by giving every man in the street access to his own blog for a trifle, in a world very distinct from what we see in science fiction movies.

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<sup>36</sup> Pasquel, Enrique "Del Alambre de Púas al GPS. La Influencia de la Tecnología en los Derechos de Propiedad." In Soria, Alfredo (Ed.) *El Impacto de las Innovaciones Tecnológicas en el Derecho Privado*, Fondo Editorial de la UPC. pp 171-192.

Moreover, this (once again) has noteworthy consequences in terms of society's well-being. As Amartya Sen has aptly pointed out, famines are not caused by deficient food production or natural disasters, but rather by the lack of democratic institutions and the freedom of expression. No country where an independent government that holds regular elections with opposition parties and whose policies are therefore subjected to criticism has suffered a veritable famine. Famine is avoided when there are the correct political incentives and the citizenry has access to independent information. Governments only adopt the appropriate policies to address hunger when they know that their political demise is a systemic possibility. If this risk does not exist, the incentives to eradicate hunger disappear.<sup>37</sup>

## 6. Conclusion

What is true is that movies of science fiction have revealed themselves to be just that: fictions. What we see in reality is that technology is an ally of freedom and development and makes Law more just and efficient. This is reflected in Law that cannot be considered irrelevant, at least not in this aspect. Technology, and the development associated with it, would not be possible without a certain type of Law and without a certain type of legal institutionalism. In stark contrast to what we see on movie screens, predictions based on experience could portray much better worlds, with greater well-being and greater chances of realization for everyone. Law would also be more efficient, modern, and capable of promoting peace and good will.

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<sup>37</sup> In "Amartya Sen, un economista preocupado por la justicia social" en ACEPRENSA, 149/98, Madrid, España, 28-X-98 <http://www.aceprensa.com/articulos/print/1998/oct/28/amartya-sen-un-economista-preocupado-por-la-justic/> (visited March 8, 2011).

Technology empowers citizens. Today satellite television and Internet make it impossible for dictatorships to lie about what is happening in the rest of the world. A cell phone, which is within the means of even a person of modest income, makes it possible to speak with the rest of the world, something once reserved for a privileged group. Medical advances have caused life expectancy to multiply by a factor of 2.5 in only 100 years, benefiting everyone, rich or poor. Today with Skype it is possible to talk for free with someone on the other side of the world, a call that 10 years ago cost more than US\$200. Internet gives us access to more information than any library in the world, information we only need to move a computer mouse with our hand to obtain. Today millions of people fly from one country to another at affordable costs, something once reserved to the privileged few who had to settle for traveling by sea. Technology distributes power before it concentrates it, exactly the opposite of which tends to be suggested in science fiction cinema. Law and its ally, technological development, move us further away from dystopias and, paradoxically, presage a utopia very different from those that continue to be advanced by socialist and statist perspectives of society.

Three men are walking down the road – an honest politician, a corrupt politician, and Superman. If they see a \$100 bill lying on the ground, which of the three takes it? The corrupt politician does, of course, because the other two only exist in science fiction.

Utopias tend to advance socialist visions of reality that grew to be tremendously popular. These include the conceptions of utopian socialists such as Owen, Saint-Simon, Fourier and Cabet. Historical experiences of socialism, however, resemble more closely dystopias than utopias. Similarly, the dystopian visions of capitalist models of development that are found in science fiction films, visions that associate technology with an unjust or irrelevant Law, do not

correlate with reality. The available evidence show that these models lead to realities that people from the past might have qualified more as a utopia.

It is true that the dystopian vision of capitalism and the utopian vision of socialist or statist models of development seem to be, like the honest politician and Superman, taken from science fiction. In contrast, real life shows us that a legal system based on institutions that encourage innovation, such as property, contracts, and corporations, leads us away from an unjust Law and from an irrelevant Law, and towards fuller enjoyment of individual rights and greater well-being.