

Patent Search For Engineers and Lawyers
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Lecture – 02
IP – Economic Rationale

Welcome, to my lecture on Patent Rights and its Justification. In this lecture, I will be covering that why patent right is essential for the progress of science and technology, for development of new technology and as well as why patent rights are necessary for the general public.

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The slide is titled "The bundle of rights picture in Patent". It is divided into two columns. The left column is titled "Real Property" and lists five bullet points: "Infinite Series of Rights ($R_1, R_2, R_3, R_4, \dots, R_n$)", "Right to possess the thing which he/she owns.", "Right to use and enjoy the thing owned.", "Right to consume, destroy or alienate the thing.", and "Residuary entitlements.". The right column is titled "Section 48 of the Patent Act" and lists two bullet points: "Product Patent: The exclusive right to prevent third parties from making, using, offering for sale, selling or importing" and "Process Patent: The exclusive right to prevent third parties, from using that process, and from using, offering for sale, selling or importing the product obtained directly by that process". At the bottom of the slide, there are three logos: the IIT Kharagpur logo, the Swayam logo, and another circular logo.

Now, before I begin this is my, let us try to recollect what we have learned in the last class. In the last class, we have seen that property rights are in fact, actually a bundle of rights, a bundle of entitlements to which the property owner is entitled to. We have seen suppose a mobile phone owner he has a say set of entitlements which are recognized and protected by the legal system like he does have the right to make a phone call, he has a right to sell the mobile phone, he has a right to destroy the mobile phone and so on and so forth. And, if we keep on writing the entitlements to which a mobile phone owner is entitled to and in our whole life will not be able to write it down.

But, this similar feature we have seen that it is present in intellectual property. To be very most to be more specific, this is also present in copyright system and this is also present

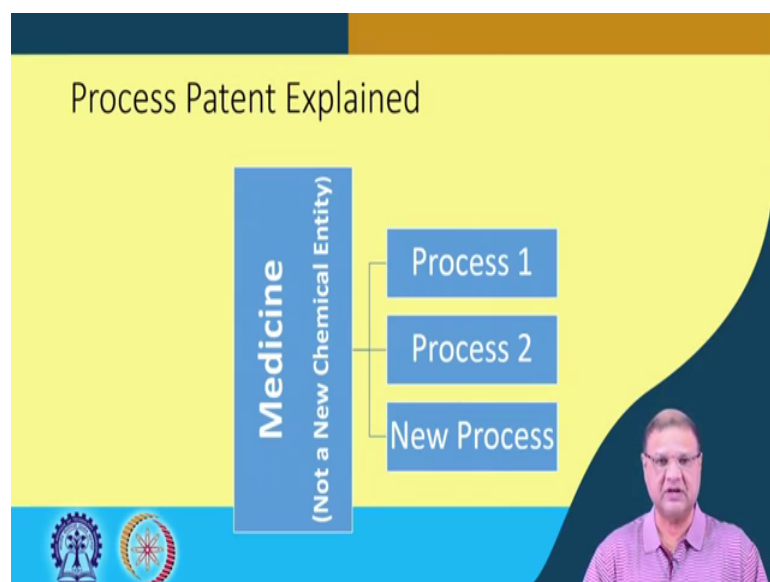
in all other intellectual property branch including the present study which you are undertaken on patent law.

Now, so far as patent right is concerned actually that is embodied in section enumerated in Section 48 of the Patent Act and it makes a distinction between product patent and process patent. And, once I actually tell you what are the rights to which a patent is entitled to I will try to make a simple distinction, I will try to explain that what is process patent.

Now, so far as product patent is concerned we the read the line very carefully, it says that the exclusive right to prevent third parties from making using offering for sale or selling or importing the product in India. And, when actually the patentee owns a process patent he or she does up the exclusive right to prevent the third parties from using that process and then from using offering for sale, selling or importing the product obtained directly by that process.

So, here Section 48, which is the right conferring provision in the patent law, it actually makes a distinction between product patent and process patent and it talks about actually an exclusive right to exclude others not an exclusive right to do.

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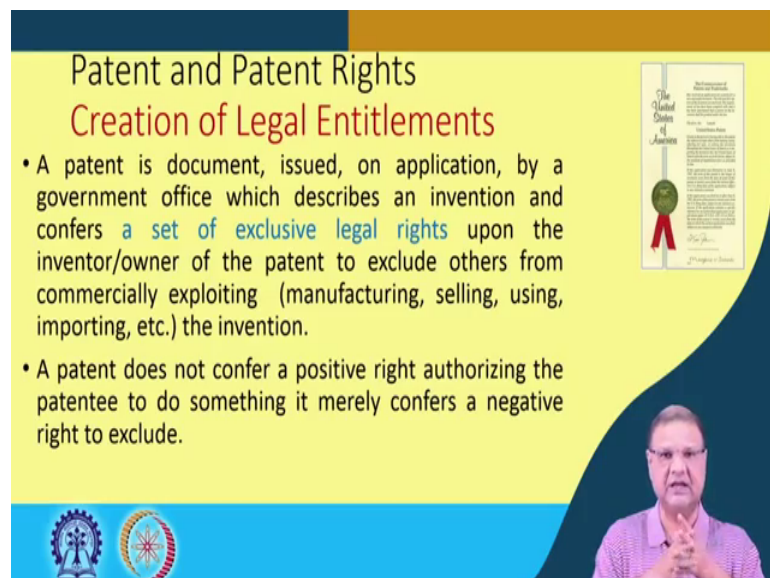
Now, what is process patent I let us try to understand with the help of an example. Suppose, a company has come out with them, there are medicines which are available

and in the market and this medicine can be produced by different processes say a process number 1 and process number 2. Now, a new former company comes out with a new process and this process satisfies the patentability criteria. In that case what could be actually the ambit of the patent right, what would be the scope of the patent right of that process patent holder?

Now, let us go back to the previous slide it says that the exclusive right to prevent others from using that process. So, nobody else in the world if he has a taken a PCT patent or if he has taken a patent only in India, nobody in India would be able to use that process which have been patented for the purpose of producing or manufacturing the drug. Not only that a process patent holder would also be actually would be able to prevent others from using a product that is actually produced following the process the patented process he has developed.

So, he normally he can prevent others from using the process and he can also prevent others from using, selling or offering for sale the product which is directly obtained by following the process which he or she has developed. So, this is the ambit of process patent in India.

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The slide features a yellow background with a blue and orange header. The title 'Patent and Patent Rights' is in black, and the subtitle 'Creation of Legal Entitlements' is in red. A list of two bullet points is on the left. On the right, there is an image of a patent document with a red ribbon seal. At the bottom right, a man in a purple shirt is speaking. At the bottom left, there are two circular logos: one with a gear and a person, and another with a gear and a sun.

Patent and Patent Rights

Creation of Legal Entitlements

- A patent is document, issued, on application, by a government office which describes an invention and confers a set of exclusive legal rights upon the inventor/owner of the patent to exclude others from commercially exploiting (manufacturing, selling, using, importing, etc.) the invention.
- A patent does not confer a positive right authorizing the patentee to do something it merely confers a negative right to exclude.

And, now what is in fact, we now understand that. In fact, when someone gets a patent a document comes to him and this document is a grant of what you called by a government and it actually gives the person the patentee a set of exclusive right and he has the right

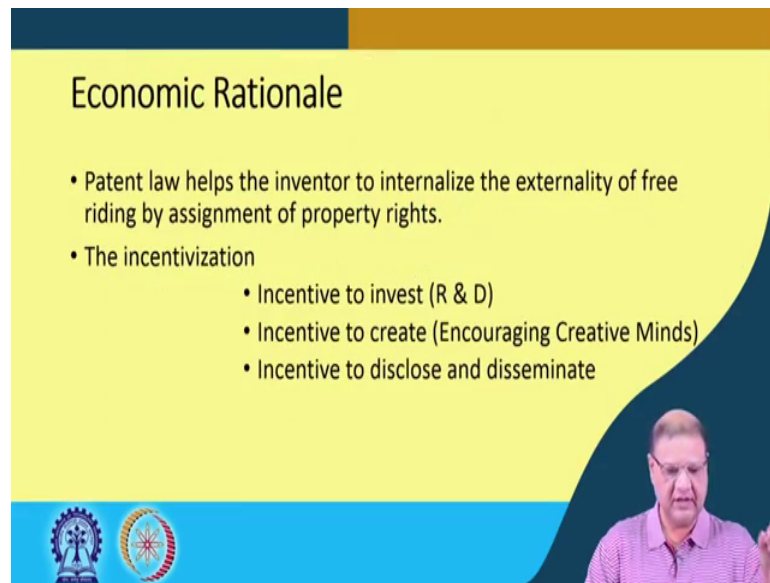
to exclude others. At this point we need to understand that what is the distinction, why it is not that you have the patentee does have the right to do, why it is being written that he has a right to prevent others from doing.

So, what, why this provision has been casted in a negative manner instead of being casted in a positive manner? So, this can be understood with the help of certain examples and I will be giving some examples. Suppose a person has come out with a patent. Person A has; person number 1 has come out with a patent and that patent is with regard to a chair. So, let us say that he has come out with a patent that patent has actually a kind of claim portion with regard to the back rest and also a plat sitting platform.

Now, what happens he can produce that chair and nobody else can produce the chair. Now, what happens a third person comes out with an improvement thereupon, that improvement has a reclining feature. The back portion of the chair it can recline and he also develops a further improvement that it does have a hand rest. Now, the question is this that if the patent the second patent holder if that patent holder is given an exclusive right to do things he will be immediately doing things. But when he does this suppose he actually, he thought selling a chair with a backrest, with a with a sitting platform, with a hand rest and also a reclining feature he would be infringing the prior patent.

And, as a result of this actually the patent right only gives the patentee a right to exclude others; a right to exclude others from doing that and he if he wants to do it he has to take a license from the prior patent holder. And that is the whole crux about why the patent provision is casted in a negative manner instead of being written in a positive manner; like he has the right to exclude others from doing and we will see, we will find that if you look into the of copyright law you will find that Section 14 of the copyright law. It actually gives a direct right to do certain things whereas, when it comes to patent it gives a negative right to prevent others from doing certain things.

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The slide is titled "Economic Rationale" and features a yellow background with a dark blue curved shape on the right side. At the bottom left, there are two circular logos: one with a gear and a person, and another with a sun-like pattern. A video inset in the bottom right corner shows a man with glasses speaking.

Economic Rationale

- Patent law helps the inventor to internalize the externality of free riding by assignment of property rights.
- The incentivization
 - Incentive to invest (R & D)
 - Incentive to create (Encouraging Creative Minds)
 - Incentive to disclose and disseminate

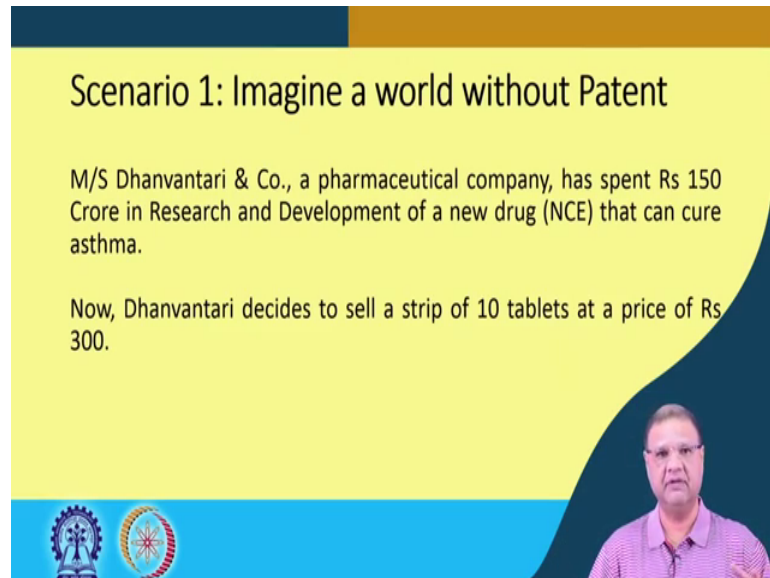
Now, in the last class we have seen actually this is what we have understood that in one line if it can be described as patent law helps the inventor to internalize the externality of free riding by assignment of property rights. Now, what is the externality what we have seen in the last class? There are twofold externality; number one once actually the intellectual property owner he disposes us he has no other option except, but to give a position of his property because if he wants to exploit economic benefit out of it, he has no other option, but to disclose it to do to everyone.

And, we have seen there are twofold criteria's. The criteria's are it is non-exclusive and non-rivalrous. So, it allows free riding by the person who has not paid the customary royalty for the intellectual property. And therefore, this actually inter the; this externality is actually an negative externality whereby the property owner who we have the intellectual property owner who has contributed to the development of the property he or she would not be able to actually would not be able to basically seek cost of production from those who are enjoying. And, in order to actually prevent this kind of scenario the government has assigned property right to plug in the external the negative externality.

We have also seen that there are the incentivization and this incentivization is actually we have seen threefold incentivization. For today's class we will club the first incentivization and second incentivization to be the one and single, and the third one to be a separate set of incentivization. Now, the first incentivization is incentivization to invest. Now,

incentive to invest who will try to understand what does it mean because in the last class I have put it in a bullet format.

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The slide features a yellow background with a dark blue header and footer. The title 'Scenario 1: Imagine a world without Patent' is in black text. Below it, two paragraphs describe a pharmaceutical company's investment and pricing. A small inset video of a man is in the bottom right corner. Logos are in the bottom left corner.

Scenario 1: Imagine a world without Patent

M/S Dhanvantari & Co., a pharmaceutical company, has spent Rs 150 Crore in Research and Development of a new drug (NCE) that can cure asthma.

Now, Dhanvantari decides to sell a strip of 10 tablets at a price of Rs 300.


Let us imagine a world where there is no patent law and if there is no patent law everyone would be able to actually make a product which has been made by someone who has actually given effort and energy, and who has come out with a novel you know invention. Now, here in this actually example I actually will talk about an hypothetical pharmaceutical company. And, the name of the company is Messrs Dhanvantari and Company. Let us say it is a famous pharmaceutical company and it has spent let us say 150 crore in research and development of a new drug and that new drug has the ability to cure asthma.

Now, see when Dhanvantari the pharmaceutical they made 150 crore investment. They were not sure that whether this would be a success or this would be a flop. They were also not sure about the market, but they have taken the risk of investing 150 crore for discovering this new drug. Now, when after this after getting a since there is no patent in the in the system so, Dhanvantari has no other option except, but to directly market it and Dhanvantari decides to sell a strip of 10 tablets at a price of 300 rupees.

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This Rs 300 roughly includes

Particulars	Amount in Rs
Dhanvantari will be recouping a small part of the Research & Development (Fixed Cost) Expense from each strip of tablets sold.	100
Cost of production, Advertisement, marketing, distribution, sample giving to doctors, and all other overhead expenses.	150
Profit a part of which can be utilized for further research.	50
Cost of 10 tablets	300

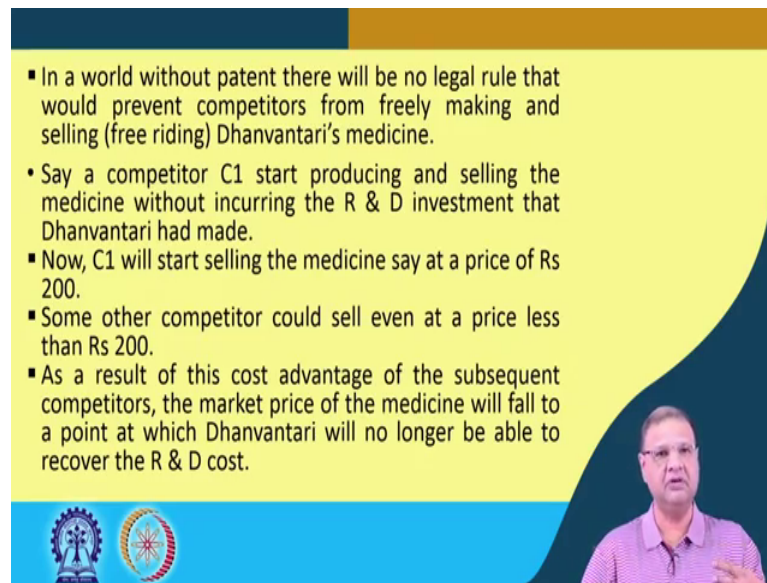


Now, these 300 rupees let us assume that there are hypothetical breakups here and this 300 rupee includes certain things. Suppose, actually the 150 crore investment which Dhanvantari has made in its research development they would be trying to recoup a miniscule part of that from each strip of medicine which is being sold in the market. For the time being assumed that it is 100 rupees, then that is actually what they have spent for developing the drug, for developing the new medicine.

Now, they would be there is a cost of production because they have to have the materials from which the tablets are being made and they would be going for actually a kind of medical represented through medical representative they will be doing a promotion of that medicine to the medical practitioners, and they will be also giving medical samples and all other. They will be distributing things to the retail medical shop where from one can buy medicine by a prescription drug.

And, then obviously, they would be also trying to make a profit and a part of that profit can be invested in future for the purpose of further research. So, what you can see that these 300 rupees has different component. The first component is hundred rupees, whereby the company is trying to recoup the expense which it had made, then 150 rupees is overhead production and all their expenses, and then it is also actually making a profit of 50 rupees and out from a part of that profit it is saving for the purpose of further research and development.

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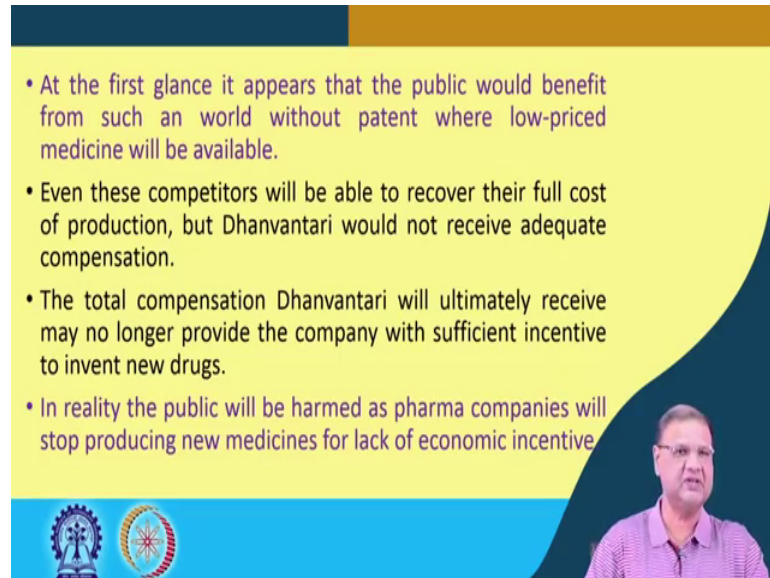
- In a world without patent there will be no legal rule that would prevent competitors from freely making and selling (free riding) Dhanvantari's medicine.
- Say a competitor C1 start producing and selling the medicine without incurring the R & D investment that Dhanvantari had made.
- Now, C1 will start selling the medicine say at a price of Rs 200.
- Some other competitor could sell even at a price less than Rs 200.
- As a result of this cost advantage of the subsequent competitors, the market price of the medicine will fall to a point at which Dhanvantari will no longer be able to recover the R & D cost.

Now, in that hypothetical world which we are trying to conceptualize, there will be in this world there will be no patent law to prevent the competitors of Dhanvantari from freely making and selling the same medicine. Suppose, a competitor he or she is clever enough to understand the formula and the composition of the new drug and he has understood it say by his reverse engineering and then by reverse engineering when he has understood the competitor has understood the formulation. The form the chemical formula of the new chemical entity it would start producing and selling the medicine, because in the absence of patent law it would not be a violation of any kind of rights belonging to the first inventor which is Dhanvantari.

Now, since actually the first competitor has not made any investment in research and development, it would be straight away it can do away with actually recovering 100 rupees from per strip of medicine because it has made no actually R and D investment. Now, straight away the first competitor C 1 would start selling the medicine at a price of rupees 200, and then if some third competitor emerges that competitor let us say that that competitor wants to even have sell it at a lesser price by reducing the profit margin it can sell it at a price of say 175 per strip. And that way, the fourth competitor cannot come up and the fourth competitor can sell it by actually using a cheaper packaging and cheaper kind of bottle for the purpose of selling this medicine.

And, at one point of what will happen the competitors actually the public would be buying the cheaper medicine and as a result of that the price of the medicine would fall to a point at which the Dhanvantari would no longer be able to recover the R and D cost.

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- At the first glance it appears that the public would benefit from such an world without patent where low-priced medicine will be available.
- Even these competitors will be able to recover their full cost of production, but Dhanvantari would not receive adequate compensation.
- The total compensation Dhanvantari will ultimately receive may no longer provide the company with sufficient incentive to invent new drugs.
- In reality the public will be harmed as pharma companies will stop producing new medicines for lack of economic incentive.

Now, if this scenario happens at first glance we think that this is good for all of us. Why it is good for all of us because as consumer would be able to buy cheaper medicine from the market. And it is also good for the competitors because competitors would be able to fully recover the cost of production which they are making. But, what would happen, there is a long term go; there is a long term long run effect on the market. So, we have seen that actually since there is a patent system since there is a patent system that the Dhanvantari thought that there is there will be a kind of protection for its medicine because this is a world without patent.

And, therefore, the Dhanvantari thought that actually some kind of mechanism would be there to prevent the others from making and because of that keeping in minds the future, what we called future profit Dhanvantari has invested 150 crore for the purpose of the drug discovery. And, now since the price of the drug has come down to such a level that actually Dhanvanatari is not able to recoup the expenses it had made. Therefore, it would it would stop doing take taking a further in never producing new drug and it would create a serious lack of incentivization.

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The First Economic Rationale (Incentive to invest in R & D)

- The grant of patent rights enables a producer to recover the fixed costs he has incurred in research and development of a product or process embodying a new invention.
- The producer incurs a huge costs towards development of the product even before any commercial application can be made.
- Without patent a competitor will be able to copy the product without incurring those costs.
- Because of this cost advantage the market price of the product will fall to a point at which the producer will not be able to recover his fixed costs.
- This stifles development of new product and process.

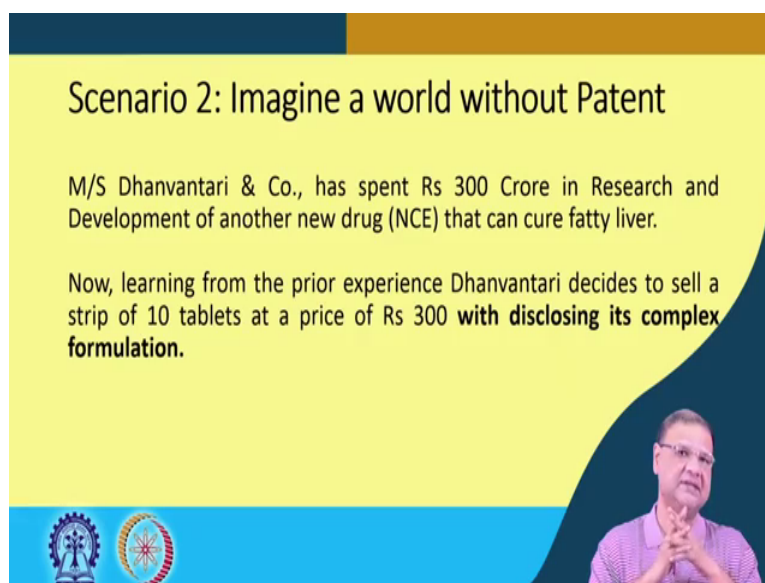
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So, now come back to what we have seen this is the first economic rationale that it is actually therefore, patent the presence of patent system is an incentive to invest. Now, we have now learned that the grant of patent right enables a inventor to recover the fixed cost. This is a fixed cost, this is the cost of production of intellectual property. So, the fixed cost for the production of an intellectual property in the form of patent and which is basically incurred in research development that patent system provides an opportunity to an inventor who is also an investor to recoup the investment what he or she has made.

And, thirdly what we have seen that without patent a competitor would be able to copy the product, because there will be no legal rule to prevent that competitor from actually using the benefit of the first comer in the market, and because of this cost in advantage the first comer the investor would be out of the market. So, this defends the development of new product and in the long run the public they would be in fact, harm by not getting new medicine for the say for example, draw antibiotic resistant what he called infections and other things.

So, no one would dare to invest money for the purpose of what he called developing new drug. And, this is the first rationale which we have discussed in the which I have mentioned in the last class I have elaborated in this class.

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The slide features a yellow background with a dark blue header and footer. The title 'Scenario 2: Imagine a world without Patent' is in black text. Below it, two paragraphs describe a scenario where a company discloses its complex formulation. A small inset video shows a man speaking. Logos are visible in the bottom left corner.

Scenario 2: Imagine a world without Patent

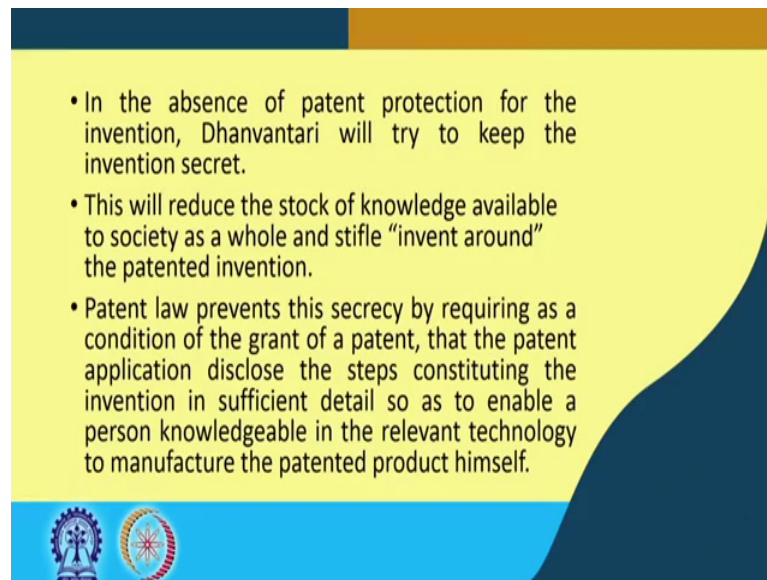
M/S Dhanvantari & Co., has spent Rs 300 Crore in Research and Development of another new drug (NCE) that can cure fatty liver.

Now, learning from the prior experience Dhanvantari decides to sell a strip of 10 tablets at a price of Rs 300 **with disclosing its complex formulation.**

Now, let us imagine a second scenario. The second scenario is actually why intellectual property system is necessary, we will try to understand with the help of this the second example. Now, here also we are trying to imagine a world without patent and here the same manufacturer it has learnt lessons from the first actually without a patent system. So, it has developed a very complex molecule and this complex molecule is so complex, the new chemical entity is so complex that it cannot be deciphered or it is near impossible to decipher the chemical formula of that composition.

So, now, that there therefore, because now Dhanvantari is very clear about one thing that by reverse engineering it would be virtually impossible for its competitor to understand the chemical formula of the new chemical entity. And after that they have invested this time they have invested 300 crore to come out with a new drug that can cure fatty liver. And, now, learning from the prior experience it decides to sell the strip of tablet without anyway disclosing its complex formulation.

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The slide features a yellow background with a dark blue and orange header. It contains three bullet points discussing the implications of patent protection. At the bottom, there are two circular logos: one on the left with a gear and a figure, and one on the right with a sun-like symbol.

- In the absence of patent protection for the invention, Dhanvantari will try to keep the invention secret.
- This will reduce the stock of knowledge available to society as a whole and stifle “invent around” the patented invention.
- Patent law prevents this secrecy by requiring as a condition of the grant of a patent, that the patent application disclose the steps constituting the invention in sufficient detail so as to enable a person knowledgeable in the relevant technology to manufacture the patented product himself.

So, what would be the effect? There is a serious effect and this serious effect is actually instead of because trade secret law is a law, which in India which is governed mainly by contract law, if there is a contract and if in the absence of contract it is governed by the common law. There is no codified law of trade secret in India.

Suppose, Dhanvantari actually has actually taken recourse to trade secret law to protect it is invention and it does not it has not disclosed it to the public at large. And, then what happens, when the new drug comes into existence the competitors of Dhanvantari they all come forward, they try to reverse engineer because they know no rule will prevent them from reverse engineering, the product because there is no patent system.

Now, after making several attempts they have failed and as a result of that public is using this medicine for a long time, but actually they do not know what is the composition. It moreover what will happen that see so far as patent is concerned it is actually the period of protection is only for 20 years and starting from the date of application for a period of 20 years, the patentee would be enjoying the exclusive right. The exclusive right to prevent others from doing things under Section 48 for a period of 20 years from the date of application, but when it comes to trade secret it would remain a trade secret so long a competitor is able to reverse engineer and understand it. So, it may happen that the formulation would be secret would remain secret in perpetuity.

Now, what we have seen that actually the very nature of intellectual property or inventions which are happening in today's context, they are incremental in nature. Think about the famous statement which Newton had made. Once he said that actually I am Newton because I am able to see a beyond what my predecessors have seen, because I could stand on the shoulders of the giants and therefore, I am Newton.

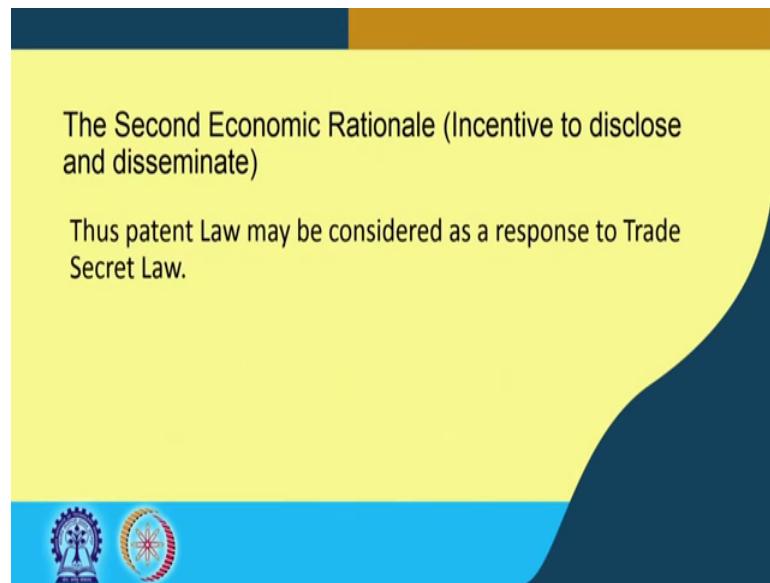
So, this is actually absolutely true in today's context also. All knowledge, all technological development are incremental in nature and it is actually premised it is structured on the pre-existing notion and pre-existing understanding, where my procedure has left I will start there from and that way the society is getting benefited. Because the patent system is actually it allows a subsequent tech that subsequent scientist, sub subsequent patentee to stand on the shoulders of the predecessors. In the patent context it is called the inventing around an existing patent.

In the absence of the knowledge of the formulation what will happen, the member of the general public or those who are interested to understand it, they would not be in a position to invent around and as a result of that the progress of technology, the march of civilization would stop. So, the what is the rationale? Therefore, patent law in fact, actually is a kind of incentive to a person to disclose. In the absence of patent law he would not be disclosing. So, patent law in fact, actually performing the function of preventing others, preventing an inventor from keeping his invention secret.

So, and now what it does, not only it does; it does have disclosure norms. To be very precise what is disclosure norm? Disclosure norm means actually the invention has to be written down in a patent application followed by claims and that patent application the patentee is required to actually explain it is in such a manner. So that a person who is knowledgeable in the relevant field of technology by reading the patent specification he or she can make or actually make the relevant technology manufacture the patented product himself.

So, this is actually this is the contribution which patent system has made.

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Now, therefore, patent system is a response to the trade secret and what is the, this also justifies the second economic rationale. So, what is the second economic rationale? Second economic rationale what we deduce here from is this that patent law may be considered as a response to trade secret law. In fact, this is actually one of the important rationale of patent law.

So, at the end of the day the question is this that actually whether patent law does it actually lead to progress of technological development? Does it lead to progress of what we call civilization? There are two views in this regard and I will conclude with those two views. A great American economist when American patent law was being dropped in. In 1952, an economist who was, a renowned economist who was working on the patent system at that particular point of time, he was asked by to comment on the new patent law.

Then what he said is very interesting and we do not know the answer even today. What he says that, what he said is actually if you do not have a patent system, please do not try to have one and if you do have a patent system do not scrap it. So, what does it mean? Does it mean that technological development is patent law neutral? We have no idea about it, but the see the patent law performs a important role in creating incentive for inventors to invest in ventures that can lead to blockbuster inventions.

Thank you.