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Looting Spectrum

MSPV Tirtha

SPECTRUM IS A TERM IN physics, especially in Optics, to denote arrangement of components of a complex color of light in order of frequency, thereby showing distribution of energy or stimulus among the components. Everybody is familiar with light, yet nobody knows what is light. No less a person than Albert Einstein said, "For the rest of my life, I will reflect on what light is". However, finding that the path of light forms a wave pattern, scientists suggested the electro-magnetic theory of light, according to which the electro-magnetic waves have various wave lengths and frequencies. The scientists probing the nature of Sound also found acoustic vibrations similar to light waves but differing in wave lengths and frequencies. Other discoveries prompted the science community to combine all kinds of electromagnetic waves in order to draw a logarithmic scale, on one edge of which is measured the wave length tending to 0 that is, decreasing, with corresponding frequencies, increasing logarithmically on the other edge and, for the sake of simplicity people call this scale the electromagnetic spectrum. Frequencies are measured in Hertz (Hz) and wave lengths in Angstrom (A°). 1 Angstrom $=10^{-10m}$ and wave length (λ) is measured in meter. Visible light applies to the part of the electromagnetic spectrum in the wave length range from λ=7800A°=780nm (red light) to λ=4000A°=400nm (violet light). Visible light does not differ from other electromagnetic waves, namely, infrared, microwave, radio waves, on one side of the visible spectrum and ultraviolet, X- and gamma-rays on the other side. The term "light" is used in a broader sense meaning electromagnetic waves on the logarithmic scale known as the electromagnetic spectrum. Thus the electromagnetic Spectrum shows a logarithmic scale wherein is found a continuous sequence of frequencies and wavelengths of electromagnetic radiation consisting of a varying electromagnetic field propagating in space. Now, this concept of "Spectrum" has wide applications in Electronics, Telecommunication, and Chemistry besides Physics. For example, the spectrum analyzer in Telecommunication records or charts the number of signals with their relative frequencies over a wide frequency band.

Mankind has now entered the information age from the industrial age. In the computer world's parlance, data is the raw material and processed data is information. Computer plays a central role in Information Technology (IT). Internet is an interconnection between several computers of different types belonging to various networks all over the world. Internet is a network of thousands of computer networks. Internet is an extremely complex combination of thousands of technologies and scores of services used by millions of people around the world each moment. The usual way to hook up one's personal computer (PC) to the internet is over the telephone line through a modem. Besides the wired telephone system, there is also wireless telephone system. Besides various wired systems through guided media such as twisted-pair wire, coaxial cable, optical fibre there is available the unguided media, such as radio waves, of which radio transmission is familiar to all for long and the microwave transmission forming the heart of the long distance telecommunication is known to the operators in terrestrial and satellite microwave highways across the globe. Geostationary satellites at 36000 kilometer above the

equator in space fitted with antenna serve as the crucial link between transmitting and receiving stations on earth. Although the cost of satellite communication is high, the average cost gets reduced proportional to the number of users. It is here only that a mobile handset for telecommunications becomes relevant. The mobile that people use everyday is a kind of computer most of them connected to internet.

For the sake of understanding the problem of 2G/3G spectrum scam that has been raging the country for some time recently, it is not illogical to suppose that the initial providers of the mobile service were terrestrial microwave service providers. Now, this system can provide very few services such as establishing a call and transmitting voice messages. This is like POTS or plain old telephone service, yet it is an improvement on POTS in that one can communicate while in transit. But the 2G system provided through communication satellite can deliver more services besides those provided by the first generation system. In this case the scientific term, "spectrum" is being used for commercial purposes. This second generation or '2G spectrum' provides breaking news, images, multimedia, internet connection etc. For these additional services, consumers will choose them. In this way, a new market is generated. In India the telecommunications market is centrally controlled since the beginning of the British domination. The foreign rulers were afraid of intercommunication among Indians because they feared that mutual and mass communication among Indians might lead to sedition. So the British rulers framed and rigorously enforced laws prohibiting communications on radio waves. Modern India is blamed as license raj in the West but the system of license is a legacy of the British raj. License on radio sets was abolished only yesterday. In the same way the usage of television was curbed as long as the ruling class could do it. But the wall broke down due to internal pressure emanating from various causes; the foremost among them is the condition of quick communication linking between international finance capital and India's burgeoning corporate world. However the openness in telecommunication in all its forms had a cascading effect on common man's communication among themselves. It was like breaking loose of a dam of colossal size.

The first generation (1G) of spectrum has arrived. As the size of the market grew and the profit of the providers of the service rises, other firms become interested to enter the field. One way entering the field in India is purchasing the license from the original licensee at a great price leaving a great margin of windfall profit for the original licensee for whom the offer is too lucrative to ignore or reject. Alternately the original licensee's name remains as before, but the new operator operates in the former's name and pays some kind of rent to the original licensee. Something like this, one may presume, happened in the case of the 2G scam. The CAG must have calculated the magnitude of loss of revenue on the basis of the difference of what actually the market rate of the license is and what the original licensees paid as license fees. And the amount of loss of revenue turned out to be astronomical. If the original licensees had neither sold nor leased the licenses in the way they did or if the new operators could pass a part of the profit to the consumers by reducing service charge or something like that, the swindle would not have been detected.

Allocation of 1G licenses were made on first come first served basis. Ministers, bureaucrats and persons in the business community attached to the Ministry of Telecommunication and other related Ministries made fortunes on that. A Raja followed the same procedure but only advanced the last date of submission of the application. There is apparently no wrong doing in it. But after the allocation of the 3G spectrum through auction, which fetched huge sum of money to the exchequer, the Government could not ignore the CAG report on 2G spectrum allocation and understood the magnitude of the loss of revenue to the exchequer caused by the old method of allocation of licenses through personal contact of sorts. Raja made the mistake that he and his bureaucrat-assistants saw to it that the monetary benefits, at least the lion's share of it be channeled to some of his relatives. Raja and some of the beneficiaries of the loot are currently languishing in jail. But Subramanian Swami is not satisfied. He brought this scandal before the Supreme Court of India with the express desire to put some other bigwigs into disrepute and possibly in jail. However the Court cancelled all 122 licenses and asked the Government to award licenses afresh transparently through auction within a specified time frame. The Finance Ministry is likely to find in this judgment an opportunity to raise additional revenue. But the greater issue is that the investors, especially the foreign ones, are shocked, fretting about the prospect of billions of dollars going down the drain. The foreign investors played on the Indian turf according to rules prevailing in India. Some legal luminaries, without saying so directly, questioned the merit of the judgment. The anti-corruption campaigners hail it as path-breaking that vindicates the relevance of their movement.

But the fundamental question that must be addressed is that this 'spectrum' business going on for more than a decade in India is the source of huge quantity of money concentrated in a few pockets, of concentration of wealth in a few families whereas the basic infrastructure, that is, the Geostationary satellite as well as all the network components, in short, the entire fixed capital of the business is built at public cost. All the people of India bore the cost, are still bearing and will continue to bear the enormous cost. The returns, if any, should go first to the people and not to selected business families. The government-owned telephone sector could have been entrusted to provide the entire range of services and at cheaper rates. Why could not 'DoT', the Department of Telecommunication, Government of India take the responsibility?
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