India's Internet What it is and what it could be?

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How would you have interpreted this?

1917

Mohandas Gandhi, unknown in India, recently returned from South Africa, answers a call for help from peasants in Champaran, Bihar.

7 months later he is a national leader.





1825 Indigo monochrome rollerprint on linen

How would you have interpreted this?

"Champaran...used to be full of Indigo plantations until...1917.

The Champaran tenant was bound by law to plant three out of every twenty parts of his land with indigo for the landlord...the *tinkathia* system.."

"My Experiments with Truth" (1925)

2,00,000 Indian Exports Kg, 1,87,000 Price/Kg DM, 11 1,80,000 10 1,60,000 1,40,000 1,20,000 Price/Kg DM, 6.5 1,00,000 80,000 60,000 40,000 Indian Exports Kg, 20,000 11,000 1895 1913

How would you have interpreted this?

British planters held sharecroppers to the 3/20th of every acre minimum indigo acreage or pay

Indian Exports Kg





A.D. 1856 Nº 1984.

Dyeing Fabrics.

LETTERS PATENT to William Henry Perkin, of King David Fort, in the Parish of Saint George in the East, in the County of Middlesex, Chemist, for the Invention of "Producing a New Coloring Matter for Dyeing with a Lilac or Purple Color Stupps of Silk, Cotton, Wool, or other Materials."

Sealed the 20th February 1857, and dated the 26th August 1856.

PROVISIONAL SPECIFICATION left by the said William Henry Perkin at the Office of the Commissioners of Patents, with his Petition, on the 26th August 1856.

I, WILLIAM HENRY PERKIN, do hereby declare the nature of the said Invention for "PRODUCING A NEW COLORING MATTER FOR DYEING WITH A LILAC OR PURPLE COLOR STUFFS OF SILK, COTTON, WOOL, OR OTHER MATERIALS," to be as follows:—

Equivalent proportions of sulphate of aniline and bichromate of potassa are to be dissolved in separate portions of hot water, and, when dissolved, they are 10 to be mixed and stirred, which causes a black precipitate to form. After this mixture has stood for a few hours it is to be thrown on a filter, and the precipitate to be well washed with water, to free it from sulphate of potassa, and then dried. When dry it is to be boiled in coal-tar naptha, to extract a brown

Perkins' Patent

How would you have interpreted this?

1856

18-year old William Perkin, encouraged by his German professor von Hoffman, trying to synthesize quinine from coal tar got a purple-coloured solution, which proved to be an effective dye for textiles.

The synthetic chemical industry was born.



How would you have interpreted this?

1895

Indian Exports: 187,000

Price /kg DM 11 Area: 650,000 acres

1913

Indian Exports: 11,000

Price /kg DM 6.50

Area: (1906)115,000 acres

1870 Bayer Synthesis attemptsno success

1856 success
Perkin
(UK)
synthesis
'mauve'
aniline
dye from
coal tar

1880
Lab-scale
Synthesis
Munich Uprice far
higher
than
natural...
Nobel
Prize

1882 New route to Synthesis Baeyer price still too high 1890 Zurich Polytechnic synthesistoo expensive

1897
Bayer,
Hoechst
master
process
engg- 80%
of world
share

1917 Gandhiji Champaran Satyagraha

Source: Freeman, Soete: Economics of Industrial Innovation, p 90

...but we took the wrong lesson?



How would you have interpreted this?

"The tinkathia system...in existence for about a century was thus abolished... the superstition that the stain of indigo could never be washed out was exploded."

-"My Experiments with Truth"

...the German trajectory after the Indigo synthesis



IG Farben

AGFA (Actien-Gesellschaft für Anilin-Fabrikation), Berlin; BASF (Badische Anilin und Soda Fabrik), Ludwigshafen; Bayer,

Leverkusen; Farbwerke Hoechst (now Sanofi-Aventis), Höchst

Note- 'aniline' in the names-'anil' from Arabic 'Neel' for blue

1930's

- New! Red azo dye that kills streptococci bacteria in mice
- Active ingredient,
 Sulfanilamide creates the pharmaceutical industry
- Institutions: patent system, process engineering, chemistry teaching...

What the Internet is

increases societal productivity



Spinning Jenny



Continuous Flow Plant



Moving Assembly Line

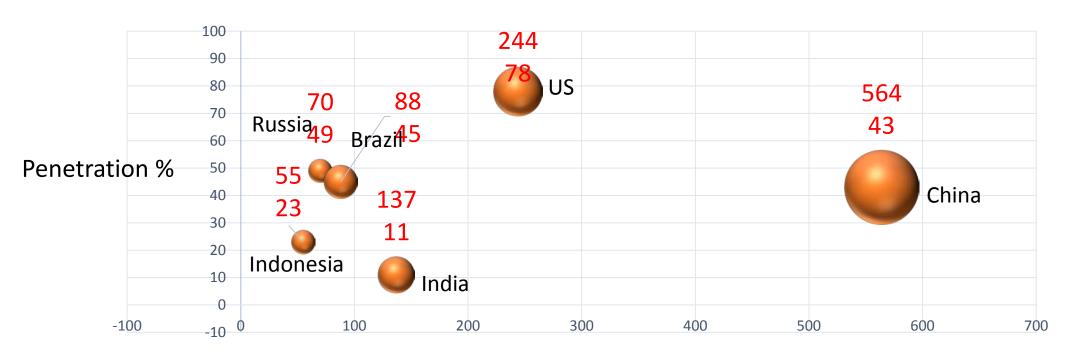


Information Intermediary

Two-sided markets US exports of digital service in 2011; \$356 bn



The puzzle of India's internet penetration



Users in Millions

India internet penetration < Russia, Brazil, Indonesia

Why internet penetration is so low most Indians cannot afford it

Managerial: 30m

Professional, Technical: 50m

Clerical, Shop Assts 50m

Hawkers, pedlars, street vendors...: 135m

Carpenters, masons, tailors...: 60m

Informal workshops, Transportation...: 320m

Farmers, fishermen, hunters, loggers...: 420m

Household Income pm

Rs 13,000

Rs 13,000

Rs 9,000

Rs 7000

Rs 6000

Rs 4000

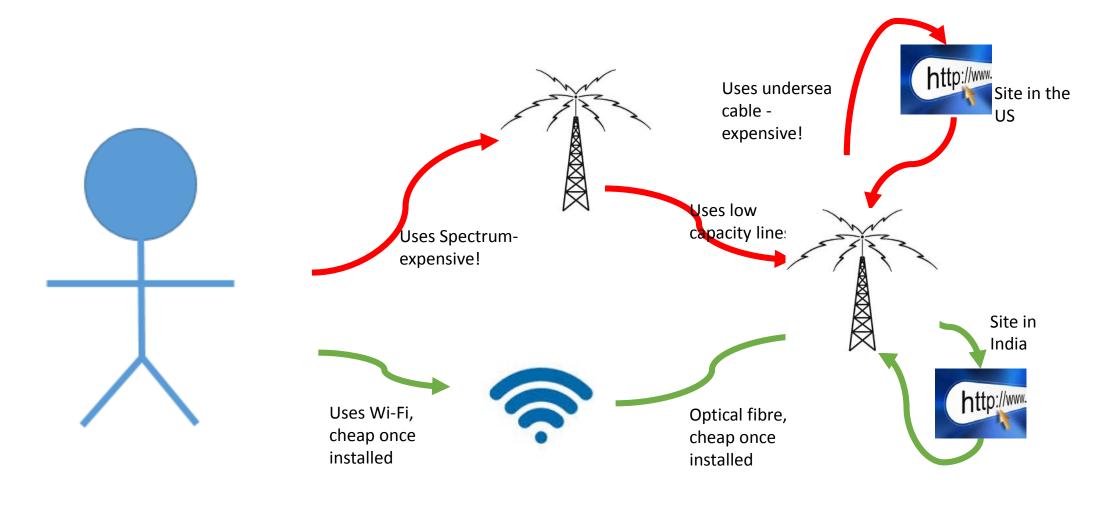
Rs 4000

Target broadband price: Rs 100 pm unlimited use "Broadband"= >4 Mbps download speed, >1 Mbps upload speed

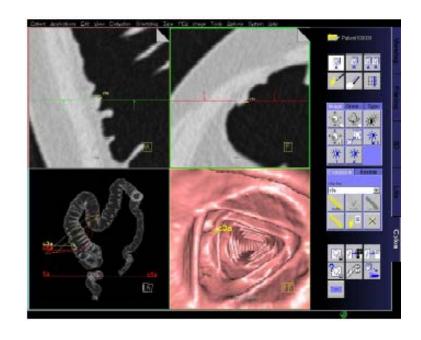
Source for Income data: National Council of Applied Economic Research, How India Earns Spends and Saves

Public policy issue- 5

Why internet access is so expensive in India



The internet promise in Health Care



- Training radiologists to detect colonic polyp is a long process.
- A machine learning system used by non-experts has detection rates of 96%, reduced false positives by 66%
- Source: R Bharat Rao and others: Siemens, US

The internet promise in school education



Conquer Step distance: Distance Education

Step

Conquer time: downloada ble video lectures

diagnosis Vs. tests as gatekeepers

Step

Vary lesson structure and flow by student level

Low device and bandwidth cost

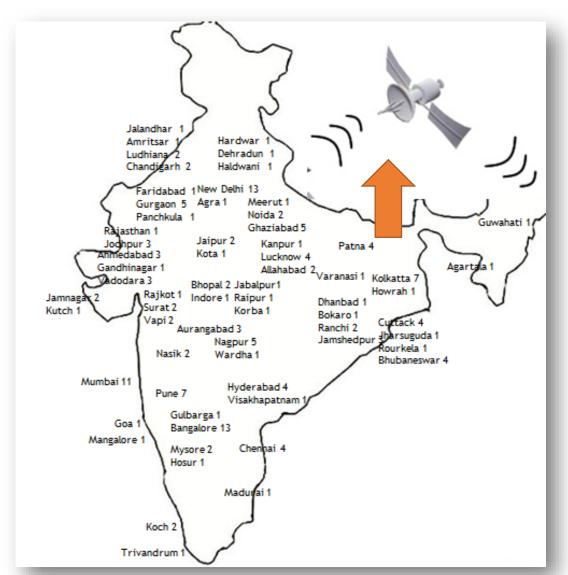
Lots of video lectures

Diagnostic Test design skills

Tests as

Laddering- Topic Modelling

The Internet promise of Business Education ...dilemma at Indian Institute of Management Calcutta



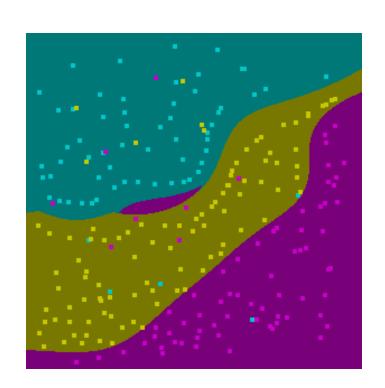
	Now	Can be
Teaching staff	Calcutta	All IIMs, Int'l located faculty
Students	70 cities, 170 centres, 4000 students	All IIMs, 3000 India Business Schools, International

Financial Times London world ranking 2013 Overall No 18, Finance No 1, Economics No 2

The Industrial revolution in 2 pics



Machine Learning- the Spinning Jenny of the modern era





...are we entering a new era, un-noticed?

"...most of its aristocracy, governing elite and intellectuals, Austen, Shelley, Keats, Wordsworth, Coleridge, Byron, and Burke, as well as Smith, Malthus, Ricardo...seemed unaware of their times as an era of transition towards a 'modern' world."

• Thomis: Responses to Industrialization

...the Industrial Revolution largely went un-noticed-Toynbee coined the phrase 100 years later

For more debates like this

