ASSA DORON and ROBIN JEFFREY

The Great Indian Phone Book

How the Cheap Cell Phone Changes Business, Politics, and Daily Life

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CONTEN

Preface
Glossary
Abbreviations
List of Maps, Illustrations, Figures and
Acknowledgements
Radio Frequency and Mobile Phones

Introduction: 'So Uncanny and Out
In India
In the world
In conclusion

PART ON
CONTROLL

1. Controlling Communication
Horses, runners and rulers
Untying communication
2. Celling India
Act I: '… Within a fortnight …'
Act II: Sidelining the referee
Act III: Bread, clothing, shelter—an
Act IV: Schools for scandal

PART TW
CONNECTI

3. Missionaries of the Mobile
Man's best friend

2

CELLING INDIA

Make a phone call cheaper than a postcard and you will usher in a revolutionary transformation in the lives of millions of Indians.

Dhirubhai Ambani, in Keskar, 'Reliance Infocomm'

A huge Indian flag flutters over the memorial where Rajiv Gandhi was murdered by a suicide bomber. The village of Sriperumbudur is about 30 kilometres west of Chennai, and Rajiv Gandhi's electioneering cavalcade reached the place about nine o'clock on the evening of 21 May 1991. He had been riding in his white Ambassador car—a symbol of out-dated self-sufficiency in post-independence India—with Barbara Crossette, the correspondent of the *New York Times*. Moments after he left the car there was 'a large boom' and he was blown to pieces. Crossette was hustled away in the same car, back towards Chennai. 'All along the route it was clear that no one had heard of the assassination. It took the news agencies nearly an hour to begin telling the people of India that Gandhi was dead'.[1] In New Delhi another reporter was celebrating a birthday with other journalists when a message came about 11pm that the former Prime Minister had been assassinated. 'I went upstairs', he wrote, 'and took one look at the Press Trust of India and United News of India teleprinters and they were carrying one-sentence flashes … All India Radio didn't carry the story, I don't think, until midnight'.[2]

In 2010, the largest cell-phone factory in India and one of the largest in the world stood two kilometres from the Rajiv Gandhi memorial. The Nokia factory at Sriperumbudur was located in an 85-hectare Special Economic Zone, where 12,000 workers produced thousands of phones a day. The Ambassador cars, teleprinters and peaceful obliviousness that Crossette saw in the countryside around Sriperumbudur in 1991 had been replaced by a Hyundai car factory, Korean restaurants, pervasive mobile phones and steady streams of buses ferrying workers back and forth to the Special Economic Zone where various industries, as well as Nokia and Hyundai, had been set up.

When Rajiv Gandhi died, there were six phones in India for every 1,000 people, and Crossette had to wait till she got to a hotel phone in Chennai to tell her newspaper what had happened. Late at night on the road from Sriperumbudur in 1991, it made no sense to look for a working phone. A car-based mobile phone had been introduced in New Delhi in 1986, but by June 1988, 'the number of subscribers working in Delhi are 76 and there [was] a waiting of 252'.[3]

If the coming of the mobile phone to India were told as a fairy tale, it would begin with a description of a Wicked Witch holding her subjects in bondage by preventing them from talking to each other. Indeed, such a picture is not too different from the one Ashok Desai presents in his path-breaking book *India's Telecommunications Industry*. When Rajiv Gandhi died and India's economic reforms began in earnest, the telecommunications industry was 'a placid backwater' where 'the service was poor' and a telephone connection had as one of its chief virtues a 'black-market value'. A phone was a luxury that very few people had, and, if they did, a phone's use for actually making calls was limited and uncertain.[4] In the years that followed, the Wicked Witch, in the guise of the telecom bureaucracy of the Government of India, used all her wiles to retain control of the invisible charm called Radio Frequency spectrum, which was acquiring great value. In the end, the Witch had to surrender some of her powers and the people of India found themselves able to communicate as never before.

This caricature captures aspects of the struggles over the use and allocation of Radio Frequency after 1991. That drama had four acts. It began in 1991 with attempts to deregulate the Indian

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economy and allow private industry to provide telecommunications alongside the government provider. This episode culminated in the tortured labour and birth of the Telecom Regulatory Authority of India (TRAI) (intended to be the referee for the new competitive telecom industry) in 1997. The second period could be called 'The Travails of TRAI' as the new-born regulator struggled haplessly with the telecommunications bureaucracy of the Government of India. The bureaucracy—multi-layered and maddeningly patient—acted with remarkable coherence to hobble the regulator. This standoff led the Prime Minister, Atal Bihari Vajpayee, to take the telecommunications portfolio into his own office in 1999 and abandon many of the failed rules and policies of the previous five years. A New Telecom Policy was announced in 1999 and over the next two years most controls on private companies providing telecom services were removed.

Until 2002, expansion of the telephone network across the country had been modest. There were only 45 million phone connections for 1,000 million people. By 2012 telephone connections reached 900 million.[5] The robber barony and institutional skulduggery that went with this expansion form the third part of the story. Act IV, in which ministers were jailed and the courts abrogated agreements that had attracted huge investments, played out well into the twenty-first century.

Act I: '... Within a fortnight ...'

The above assurance—'within a fortnight'—given to would-be telephone subscribers in the early 1990s carried a melancholy promise of long waits and musty files. The same document spelled out how such marvels would occur:

> applications for new connections received along with necessary deposits will be registered in the office and entered in a register on the very date of receipt and entries attested by the officer authorised for the purpose.
>
> ... A serial number will be allotted against each application. Serial numbers in the Waiting List should be given in the order of the date of payment. ... The registration number shall be intimated to the applicant within a fortnight in the pro forma attached to the application form.[6]

Even the promise that applications would be registered 'on the very date of receipt' was little comfort when the waiting list ran

to 2.5 million. *Swamy's Treatise on Telephone Rules*, the 850-page guide to the procedural mysteries of the government telephone monopoly, was a profitable publishing venture as late as 1993 (See Illus. 4).

Why had the telephone spread so little in the forty years after independence? There were physical reasons. The country was vast and rural. To connect 600,000 villages by copper-wire phone lines would have been a huge and expensive task. Copper was valuable. A meter of cable contained more than three kilograms of copper, and copper in the 1970s was worth about US $4.00 (Rs 30) a kilogram. A metre of copper phone cable in those days could add up to more than Rs 100: a week's wages for a school teacher or lower-ranking government servant.[7] Not surprisingly, rural phone wires sometimes disappeared.

In 1990–1, the First Gulf War's jolt to the economy increased oil prices which drained foreign exchange and cut off remittances from workers in the countries of West Asia. The war threw tens of thousands of Indians out of work in the Gulf, many returned to India, and the foreign exchange they had been sending home dried up. India was running out of dollars to pay its energy bills.

Telecommunications in India, and particularly telephones, were ripe for change. The exasperation of a growing middle class coincided with global economic and administrative pressures to reduce government controls on the economy. Such pressures, combined with the opportunities offered by new technologies, put telecommunications near the top of the reform list of the Congress-led government that came to power in June 1991. The Public Call Offices had allowed large numbers of Indians to experience the convenience of a functioning telephone for the first time. Such experience increased the frustration at the difficulty in obtaining a household or office phone and at the unreliability of a phone once it was installed.[8]

A strike by government telecom employees in December 1990 emphasised the need for change, even to sceptics. The corporatised government entity that provided telephone services to New Delhi and Mumbai (Mahanagar Telecom Nigam Ltd or MTNL) proposed to pay its 70,000 employees a bonus for good performance. MTNL had been hived off from the Department of Communications in 1986 as one of Rajiv Gandhi's attempts to develop more efficient telecom services. The proposed bonus was intended

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to reward workers in the new entity for steady work in meeting targets. But the 370,000 employees of the *other* government telecom agencies went on strike for a similar payment, though no one except they themselves was suggesting they had worked notably hard or well in the previous twelve months. In the end, no one got a bonus, but the caretaker government, which ran the country prior to the 1991 elections, set up a Telecom Restructuring Committee under M. B. Athreya, a Harvard-trained management specialist.[9] Thus when the new government under P. V. Narasimha Rao and with Manmohan Singh as Finance Minister came to power in June 1991, it had the report of a review committee waiting for it. The Athreya Report floated easily on the tide carrying the government towards economic deregulation.

The recommendations of the Athreya Committee were never going to be popular with telecom bureaucrats or 400,000 government employees of the monopoly telecom services. It recommended the creation of a new entity to provide services, in the way that MTNL was already doing for the metropolises of Delhi and Mumbai. Such a new corporation would be government-owned but independent of the Ministry of Communications.[10] It recommended allowing private enterprise to provide a limited range of telecom services, including what was then thought to be a luxurious frippery for India, mobile phones. To oversee these changes and act as a referee, the committee called for the establishment of an independent Telecom Regulatory Authority.[11] All three recommendations were eventually implemented; but it took ten years and a tortured series of contests in which a government department—the Ministry of Communications—often appeared to be resisting the policies of the government it was supposed to serve.

In the midst of its financial crisis and the need for World Bank and IMF support, the Narasimha Rao government began to open the economy to private interests and even foreign investment. It called for bids from private companies to provide mobile phone services—but not landline services—in the four big cities, Mumbai, Delhi, Kolkata and Chennai (or Bombay, Delhi, Calcutta and Madras, as they then were). Two companies were to be licensed in each city; they were required to have a foreign minority partner with telecom experience; and bids were to be evaluated largely on the basis of the share of revenue the company undertook to pass

on to the government.[12] According to one account, the telecom ministry's officials, fighting a public-sector rearguard, 'regarded mobile telephone service as a value-added' that would simply route more business through their monopoly landlines.[13] In any case, this first attempt to bring competition into telephony got bogged down in the courts when unsuccessful bidders challenged the bidding process; licences were issued for these limited big-city services only at the end of 1994.[14]

In May 1994, when India still had fewer than 9 million phones and the courts were puzzling over challenges resulting from the first changes in telecom policy, the government issued a National Telecom Policy (NTP-94). Critics claimed it 'clearly reflected the dominance' of the government servants in the telecom ministry.[15] The National Telecom Policy of 1994 emphasised the need to provide phones on demand (not after a two-year waiting period) and to put a phone in every village. But it pleaded that the cost 'clearly … is beyond the capacity of Government funding'. Thus, almost regretfully, 'the private sector would be needed in a big way'.[16] NTP-94 allowed Indian businesses, in partnership with experienced foreign telecom companies, to bid for the right to provide services in twenty-one geographical circles largely corresponding to India's states.[17] (See Map 2, p. xxxiv). The new entrants were to be allowed to offer 'basic telephone services'—landlines and other services previously provided solely by the government telephone department.

For those involved with the Athreya Committee, this was lukewarm reform. It did not break up the various functions of the Ministry of Communications. As things stood, the ministry determined policy (it laid down the rules), acted as the arbiter over policy (it interpreted and enforced the rules) and ran the telephone system (it installed telephones in homes and businesses). The Athreya Committee advocated creation of both an independent regulator and a separate corporation to take over what had been the government monopoly on the installation of phones. Such an entity, the unions feared, might be ripe to be sold off to private shareholders. The Athreya Committee also called for the opening of all telecom services to private enterprise and competition. Over the next ten years, much of this came to pass, but changes were, in Athreya's words, 'opposed, diluted and emasculated from within the Department of Telecommunications'.[18]

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Once the Indian government decided in 1994 to open some of telephone services to private-enterprise providers, it had to decide on what basis to allocate Radio Frequency spectrum—how to choose the lucky winners. Elsewhere in the world, two methods had been followed: auctions and 'beauty contests'. In an auction, governments make known the amount of spectrum on offer and the requirements that successful bidders must fulfil. In theory, companies making the highest bids are awarded use of the spectrum for a fixed period. In a 'beauty contest', aspirants submit proposals explaining their capacity to meet various criteria of service and payment, and an 'expert committee' selects the winners.[19] In 1994, the government of India, and its Communications Minister, Sukh Ram (b. 1924), decided to auction licences to private companies that would be allowed to provide some, but not all, forms of telephone service.

'The auction process', one analyst concluded, 'was a mess'.[20] Critics sympathetic to the old central-planning regime branded the government as cash-strapped, beholden to foreign agencies and 'mainly interested in raising revenue by auctioning the licence rather than in expanding services'.[21] They predicted—gloriously wrongly—'in a country where people do not regard the telephone as a necessity, the expansion of the network will slow down considerably with higher tariffs', which were likely to result from private providers having to pay government large licence fees derived from a small base of users.[22] They were right about fees: high fees limited subscriber enthusiasm; but they were wrong about people's desire to have a phone, if the price was right.

The messiness of the auction process, which began in 1995, had two dimensions. The first arose from the very high amounts that bidders pledged for licences. The Department of Communications, which was still rule-maker, rule-interpreter *and* provider of phones, put stringent conditions on what a private operator could do with the spectrum it was allocated—and what it had to pay to connect its clients to the government-controlled telephone system. The government system was still the biggest; it still owned nearly all the landlines; and it was still the only system to cover, in its own dilapidated way, the entire country.

The conditions imposed on new private operators had the 'effect of ensuring their unviability'.[23] They were permitted to

charge their subscribers no more than Rs 156 a month, yet to meet their licence payments to government and build infrastructure for an effective network, they would have had to charge probably eight times as much. Moreover, if customers in the government network called a telephone in the private-operator network, the receiving party, not the caller, was charged.[24] To try to cover the gap, the new companies charged the highest permissible rate for each call a subscriber made—a deterrent to users and new customers. 'The conditions of their licence ensured that their revenue would fall short of their costs',[25] Desai asserted. People who used a cell phone in the 1990s recalled that those were the days when calls cost Rs 16 a minute, and the telephone, mobile or otherwise, was still a luxury.[26]

The second messy aspect of telecommunications policy in the 1990s lay in litigation and corruption. The murky processes by which the earliest licences were issued to provide services like email and paging were challenged in the courts. The auction of 1995 produced 'excessive and unrealistic bids' by 'small and inconsequential companies'.[27] One such company, Himachal Futuristic Communications Ltd (HFCL), based in the state of Himachal Pradesh, submitted the highest bid in nine of the 21 circles. The Minister of Communications, Sukh Ram, happened too to be from the state of Himachal Pradesh. The company had an annual turnover of Rs 2 billion, but its winning bids entailed promises of more than Rs 8.5 billion. In effect, it had more slices of birthday cake than it was able to eat. When it was clear that its bids were beyond its capacity, instead of throwing them out as the mischievous distractions of a frivolous bidder, the communications ministry, acting in its role as referee, declared that no bidder would be allowed to hold more than three licences. It gave HFCL the privilege of choosing the three licences it most fancied—in effect, getting to keep the slices of cake with the thickest icing.[28] HFCL soon sold 30 per cent of its holding to one of India's big business groups.[29]

Such deals exemplified the charges levelled by liberal economists at the controlled economy of post-1947 India: ministers defended their ministries because they and their supporters profited from them. The Communications Minister, Sukh Ram remained a force in the politics of his home state of Himachal Pradesh for fifteen years after he and the Congress government

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Act II: Sidelining the referee

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d the charges levelled by liberal econo- economy of post-1947 India: ministers because they and their supporters prof- Communications Minister, Sukh Ram politics of his home state of Himachal after he and the Congress government

lost power in 1996. He danced nimbly in and out of the Congress Party, flirted with Bharatiya Janata Party (BJP) governments and ran his own influential state party for a time. He long avoided going to prison, though the Central Bureau of Investigation (CBI) raided his houses, seized 'disproportionate assets' and charged him with corruption in 1996, and he was convicted and sentenced to three years imprisonment in 2002 and again in 2009.[30] In January 2012, approaching 88, he was at last jailed.[31] As Minister he had, it was alleged, 'a modus vivendi with DoT [Department of Telecommunications], which earned him considerable money'.[32] In 2007, he cheerily took credit for the benefits that cheap cell phones had brought the country. 'When I took over 40 lakh [4 million] people were on the … waiting list [for a phone] with the waiting stretching from one to 10 years'. Under his guidance the wait ended and multi-national companies were invited 'to introduce the latest technology'.[33] Analysts not connected to the ministry reached different conclusions: Sukh Ram had resisted the National Telecom Policy of 1994 which was forced on him by the Prime Minister Narasimha Rao; a minister 'would not have wished to reduce the power or influence' of his department.[34] Indeed, the department fought a delaying action that staved off the creation of an independent regulator until after the general elections of 1996. The Telecom Regulatory Authority of India (TRAI) came into being in 1997 under an act of parliament that took more than a year to pass.[35]

Act II: Sidelining the referee

In liberal economies, the theory is that independent regulators are created to take the field as referees ensuring that rules are obeyed and the public interest is served when rival teams of private enterprises compete. Until 1997, the Department of Telecommunications (DoT) not only owned the ball (the wires and the phones) and wrote the rule book (e.g., the 850 pages of *Swamy's Telephone Rules*), but blew the whistle as well (decided whether grievances had merit and action needed to be taken). The creation of TRAI was intended to take away the whistle; but the DoT still wrote the rules. And the DoT had recourse to the courts—a government department successfully challenging a government-created regulator—to get its interpretations enforced when they

were at odds with the regulator's recommendations and directives.[36] Decisions of the courts in cases brought by the DoT 'reduced the role of the regulator to that of a tariff setter' in the words of the first TRAI chairman.[37] The referee was shunted to the sidelines.

In the three years between May 1996 and May 1999, India had three general elections, five governments and six Ministers of Communications.[38] At the same time, the defects of the first attempts to have private companies provide telecom services became apparent. Phones spread steadily but not spectacularly, and the government found it difficult to extract promised fees from the companies. The number of phones more than trebled in seven years—from about 5 million phones for all of India in 1991 to close to 18 million by 1998. Previously, it had taken twenty years to treble phone availability: from one million to three million between 1968 and 1987.[39] Most of the expansion in the 1990s was of landline telephones, rolled out with somewhat greater urgency by the Department of Telecommunication, now feeling pressure from its private, though hobbled, competitors. The revenue from the new mobile licensees disappointed governments, and by 1998 the private telecom companies were crying poverty, near-bankruptcy and inability to pay their dues.

The new regulator, TRAI, concluded that the cries were justified. The companies had bid too high in 1995 to succeed in a game in which the deck was stacked against them. The regulator attempted to curtail some of the advantages that the DoT enjoyed. It allowed private companies to raise their monthly rental charges from Rs 156 to Rs 600, which in turn allowed them to lower the price of calls. For the first time TRAI also gave them a share of the revenue from long-distance and overseas calls which up till then had gone entirely to the DoT, even if the call originated from the phone of another company.[40]

Such measures, however, were not enough to make the companies profitable. According to one interpretation, their collapse was precisely what the DoT wanted. It would have 'happily cashed the bank guarantees' that the private companies had deposited, seen them go out of business and 'restored its own monopolies'.[41] Politically, however, now that India was on the 'liberalization' road, no government could afford to turn back for fear of scaring off keenly wooed foreign investment.

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The BJP minority government formed in March 1998 lasted thirteen months, during which time the impasse in telecom policy drove it to draft a new policy in the winter of 1998–9. The government accepted it in April 1999—and fell almost at once (though not because of telecom policy). During the period when he acted as a caretaker prior to elections in September 1999, Prime Minister Vajpayee replaced the telecommunications minister and took the ministry under his wing. Business campaigns to 'do something about the telecom mess' contributed to Vajpayee's decision. The displaced telecom minister, who advocated forcing companies to meet their dues to the government or lose their licences, complained that the private telecom businesses were being let off the hook: 'If a cricket match is going on, are the rules changed suddenly to benefit one team just because its five players get bowled out quickly?' he asked a seminar.[42] Why should they not pay the sums they had committed? Vajpayee, however, appears to have viewed the problem differently. Politically, there was pressure to accommodate businesses that were potential contributors to his party; and economically, he could see no advantage in driving the existing companies out of business—they would generate no revenue for government, nor put many phones into homes and offices, much less villages. The telecom companies thus used their 'political means', according to Desai, to 'fend off' penalisation by the government-controlled financial institutions to whom they were indebted.[43]

When the Bharatiya Janata Party formed a coalition government after the elections of September 1999, Vajpayee retained control of the telecommunications portfolio, and in October, the government began to implement the New Telecom Policy (NTP-99). The latter aimed to break deadlocks, fix defects and get loss-making private companies back on the path to profit and growth. 'The Government recognizes', NTP-99 began, 'that the result of the privatisation has so far not been entirely satisfactory'.[44]

NTP-99 forgave the old auction debts of 1995.[45] In future, operators would be required to pay government a percentage of annual revenue, not a fixed fee. At the same time, government financial institutions gave concessions to indebted telecom companies that let them escape the bankruptcy that many claimed was imminent. 'For political reasons', political parties in power could not afford to have the companies of financial contributors fail. 'Private

operators learnt ... that access to political rulers was essential for survival, and could be used to neutralize' the DoT.[46]

NTP-99 aimed to make the cell phone industry profitable. It provided a twenty-year licence period; it based annual fees to government on a percentage of revenue; it reduced the charges for calls to and from the government phone provider; and it allowed private operators to offer all the services that had previously been the monopoly of the government.[47] It also called for the DoT to surrender its role as an installer of telephones to a government corporation which would do for the whole country what MTNL had been doing for New Delhi and Mumbai since 1986—install telephones, albeit in a leisurely way. This eventually happened with the creation of Bharat Sanchar Nigam Ltd (BSNL) in October 2000.[48]

The referee, TRAI, also came in for renovation. In 2000, the government gave it the unchallengeable right to make rulings about phone charges and about the terms under which one company's callers could connect to subscribers of other phone companies.[49] A new body was created to keep telecom disputes out of the courts—the Telecom Dispute Settlement and Appellate Tribunal (TDSAT). One view holds that the new telecom policy 'shifted the balance of power in favour of TRAI'.[50] In the sense that the powers of the dreaded DoT were curtailed, this is probably true. But another view holds that TRAI then fell victim to 'systematic stacking ... with retired civil servants' and became a creature of the minister of the day.[51]

A number of developments flowed from NTP-99. However irregular some of them seemed in terms of principled public policy, they produced a revolutionary expansion of mobile telephony. In 1999, India had 23 million phones; by 2005, it had close to 100 million, and more than half the subscribers now were customers, not of the government telephone provider, but of private companies. By 2012, India had 900 million mobile-phone subscribers.[52] In the three years after the endorsement of the NTP-99, telecommunications in India were transformed:

- The government changed the licence fee from a fixed sum (which companies had bid in the auction of 1995 and then proved unable to pay) to a percentage of a company's annual revenue. If you made money, you paid more; if you didn't make money, you paid less.

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- Licence holders were allowed to provide every kind of telephone service without having to obtain a new licence for each service.
- Licences were granted for twenty years and were to be extendable.
- The DoT's function of installing telephones was split off into a separate government-owned corporation, Bharat Sanchar Nigam Ltd (BSNL)

In 2000, the same year that BSNL was created, the government did a deal that combined technology, politics and profit.[53] It permitted companies that had acquired the right to provide landline or 'basic' services to become—in practice, though not precisely in law—providers of *mobile* phones. The two most important beneficiaries were the Tata organisation and the Reliance group of the Ambani family which had acquired the right to provide 'basic services' in a number of cities in the auction of 1995. Only a few companies had bid to provide 'basic services' because this involved laying (expensive) cable and competing with the DoT's existing landline operation which had hitherto been the only service available. The companies that opted to provide such services were allowed to complete the 'last mile', or the connection from base stations to individual houses and businesses, using a wireless technology favoured in the US to operate mobile-phone networks.[54]

The Tata and Reliance companies laid cables that carried calls to base stations in the cities in which they operated. From there, calls were carried to homes and businesses—the 'last mile' in the jargon of telecom companies—by wireless, using CDMA technology, to handsets that were cordless. In theory, such a setup was meant to behave like a phone call to a household cordless phone: you took the call in your house or office. In practice, however, the service provider could—and did!—give you the capacity of a mobile phone: your calls could be made and connected anywhere in the urban area that the phone company had its base stations. It was the mobile phone you had when you did not, strictly speaking, have a mobile phone. Users got a cell phone much more cheaply than if they had subscribed to a properly licensed provider because their supplier had paid much less for a 'basic service' licence than companies that were providing fully licensed *mobile-phone* services.[55] Stories abound of doctors, dentists and

ordinary citizens carrying cordless phones the size of loaves of bread on their daily rounds in Kolkata, Mumbai and other cities.

Companies that had paid for the privilege of providing 'legitimate' mobile phone connections shrieked of foul play and went to the newly created Telecom Dispute Settlement and Appellate Tribunal (TDSAT). Two years of legal pass-the-parcel followed: decisions of TDSAT were appealed to the Supreme Court, which sent cases back to TDSAT which returned them to TRAI. The outcome in November 2003 was that that every private company with any sort of telecom licence was given the chance to provide all telecom services. Those that had bought only 'basic service' licences had to pay a premium to put them on a more level footing with those that had paid heavily for 'genuine' mobile licences. The Ambani family's Reliance group was fined for having offered mobile-phone services without having a mobile-phone licence.[56]

The scandals and mismanagement that characterise the expansion of telecommunications were not unique to India, though they often had a distinctively Indian flavour. In the US, the auctions and lotteries of the 1980s meant that 'any chancer [speculative investor] could land a ten-year licence, then hawk it around [to] more competent operators'. The result was an 'extremely disjointed' system in which 'roaming'—using a phone in different regions—was 'extremely difficult', and the US by the mid-1990s had 'a crazy-paving of licences covering the country'.[57]

Europe did better, and by 1995, the year mobile phones were first sold in India, 'European coverage was nearly complete'.[58] Later, some European countries made policy blunders similar to India's. When they moved to a higher level of mobile communications—so-called 3G or third generation technology—they auctioned small chunks of spectrum for huge sums. But the amounts 'placed the winning bidders in financial difficulty so that investments ...have been delayed' and the licensed frequencies were used 'very inefficiently',[59] a result similar to the outcome of Indian auctions in the 1990s.

Management of radio frequency was intensely political. It involved governments and private enterprise, huge investments and technical judgements—some would say, gambles. Private, public and national interests confronted each other. India was not alone in tying itself in knots over telecom policy. But India

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brought unique features to complex problems of policy-making, as the telecom scandals of the twenty-first century made clear.

Act III: Bread, clothing, shelter—and a mobile

Act III of this story began in 2003 as the telecom industry settled down to the business of selling phones and making money. In one version, the Wicked Witch of government bureaucracy lost most of her powers, her subjects were able to speak and a few handsome princes, otherwise known as private telecom companies, gave the people miraculous ways of communicating. In another version, an impotent old King (read: a decaying pretence of socialism) lost his ability to care for his people, and self-interested young princes plotted to carve up the kingdom for private gain. More mundanely, telecommunications came to be dominated by some of the great names of Indian capitalism and influenced by some of India's most notable figures of politics and government.

There were no rags-to-riches stories at this top level of telecommunications. In 2010, as a landmark scandal matured, eight major entities, two of them government-owned, had emerged as the controllers of the cell-phone industry. It needed too much investment and influence with governments for any but India's biggest players and their foreign partners to start up and survive as providers of telecom services.

Bharti Airtel held the largest share of the business with about 22 per cent of all telephones in the country using its services.[60] One source noted that Sunil Mittal (b. 1957), the founder of the company, started it with US $900 in 1995. But Mittal came from a Marwari commercial tradition that had exercised immense influence on India's economy. From his family's base in Punjab, his father had been well enough connected to be installed in the upper house of the Indian parliament by the Congress Party. Mittal was in business from the age of eighteen, first overseeing the manufacture of bicycle parts in his hometown of Ludhiana, whose commercial middle class has been celebrated and sent up in Pankaj Misra's *Butter Chicken in Ludhiana* and Anand Giridharadas' *India Calling*.[61] Mittal moved into the import of electric generators in the early 1980s, and when such imports got stifled by government bans in India's bad old, licence-permit days, he switched to making telephones, once the government allowed private compa-

nies into that business in 1984.[62] 'The romance of Bharti [the company] with telecom started during [Rajiv Gandhi's] leadership', Sunil Mittal told a US audience twenty years later.[63] The company worked with foreign firms, attracted foreign investment, including from Singapore's Singtel, and floated on the Mumbai Stock Exchange in 2002 to raise funds for a capital-hungry industry, particularly in its starting stages.[64] In 2010, Airtel went into Africa when it took over a Kuwaiti company, Zain, and expanded its investments in Bangladesh and Sri Lanka.[65]

The families behind the second and third largest telecom providers in 2011 had remarkable similarities with Sunil Mittal's family. Reliance Telecom, one of the companies of Anil Ambani, was the biggest of the cell-phone providers that used CDMA technology and fifth among those who used GSM. The Ambani brothers, Mukesh and Anil, were heirs of a buccaneering father, Dhirubhai Ambani. He came out of a small town called Chorwad ('thieves-den', according to some translators' version) on the Gujarat coast and built the biggest industrial house in India by the time he died in 2002. Reliance's success in the mobile-phone business was, its critics would say, completely in character: the circumstances were murky. Reliance acquired 'basic service' licences in the auctions of 1995. Basic licences were much cheaper than licences to provide mobile phones. Reliance adopted CDMA, an efficient but less widespread US-based technology, to provide its subcribers with the 'last mile' connection between Reliance exchanges and individual households and businesses, thus eliminating the expensive need to run a wire to every telephone. Reliance then began, illegally, to enable its subscribers to use their cordless household and office phones as mobile phones: they could send and receive calls anywhere within reach of Reliance base stations. Reliance developed a further imaginative technique: it routed incoming international calls through domestic phone numbers to eliminate the need to pay fees to India's international call company.[66]

The all-out entry of Reliance, perhaps the best known company name in India, accelerated the rapidly growing awareness and popularity of the cell phone. Reliance used a sentiment attributed to Dhirubhai Ambani: 'Make a phone call cheaper than a postcard and you will usher in a revolutionary transformation in the lives of millions of Indians'.[67] The Reliance marketing slogans presented the mobile phone as something everyone could afford and

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needed to own, particularly the not-so-literate: '*Chitti likhane ka zamana gaya*'—gone are the days of writing letters. Another slogan took the old political standby of bread, clothing and shelter and added 'mobile'—'*Roti, kapda, makaan aur mobile*'.[68] By 2010, Reliance was the undisputed leader in providing mobile telephones through CDMA with 53 per cent of CDMA subscribers, though with fewer than 10 per cent of GSM subscribers.[69]

The third of the biggest mobile-service providers was Vodafone Essar, usually referred to as Vodafone. The ambiguity over the name highlighted the essence of the company: this was the new India, and foreign investors were welcome. The UK-based Vodafone became a two-thirds shareholder in 2007, but Essar had been in the mobile-phone business since 1994 when it got a licence for New Delhi in the allocation of licences for the four great cities (Mumbai, Chennai, Kolkata and New Delhi). Essar was 'old India' in that it was a family firm originating from Marwar and controlled by two brothers, Shashi Ruia and Ravi Ruia, rated No. 245 in the world on the *Forbes* magazine 'rich list'.[70] Formed in 1969, Essar had grown in the days of India's controlled economy, but quickly adapted to the reduction of economic controls after 1991. It went from construction, shipping, oil-drilling and steel-making into a partnership in telecommunications with Hutchison Whampoa, the Hong Kong-based group, which sold to Vodafone in 2007. By 2010, Vodafone had about 17 per cent of the total mobile phone business in India.[71] (See Illus. 5).

India's two most famous business families of the twentieth century, the Tatas and the Birlas, could not ignore telecommunications and the mobile phone. Tata adopted CDMA technology, and like Reliance, benefited from the ability of being able to offer limited mobile service for cheap landline prices in the anarchic 1999–2002 period.[72] It emerged as the second-ranked CDMA provider after Reliance. Overall, including GSM and CDMA technologies, Tata Telecommunications ranked with the government provider, BSNL, and the Aditya Birla group's Idea, each commanding between 10 and 12 per cent of the mobile-phone market in 2010.[73] Birla's Idea had acquired licences in 1995, and through mergers (with Spice, a venture of another Marwari family, the Modis, in 2008) and partnerships (with Telekom International Malaysia), Idea could claim to be the third largest revenue earner in the mobile phone business.[74]

The list thus far looked like a portrait gallery of established Indian capitalists: Tata, Birla, Ambani, Ruia, Mittal, all from western India and from the classic Marwari-Bania-Parsi backgrounds that typified Indian capitalism as it developed in the twentieth century. The odd company in a list of dominant players was Aircel, market leader in Tamil Nadu, in which the Reddy family, owners of Apollo Hospitals, were minority partners. Dr Pratap Reddy returned from the US and established what became India's premier chain of private hospitals in 1983. In 2006, in partnership with Maxis Communications of Malaysia, they took over Aircel. One of Pratap Reddy's four daughters explained the reasons:

> We believe that telecom is one of the fastest-growing service sectors in India. Like the healthcare sector, telecom also helps us to reach out to the masses in a big way... We are testing the waters.[75]

Suneeta Reddy identified a key fact: this was technology for the masses. Potentially, the mobile phone could be as essential to an individual's sense of well-being as health itself.

India's great capitalists understood that telecommunications and the mobile phone were something big, even if no one knew where the technology was going or from where the profits would necessarily come. In retrospect, initial estimates of the potential of the mobile phone in India had been laughably modest. The companies that began to set up mobile networks in the four big metros in 1995 aimed to serve about 20,000 subscribers in Mumbai, 15,000 in New Delhi, 5,000 in Chennai and 3,000 in Kolkata. When Essar, which had won a New Delhi licence, rolled out a network to accommodate 100,000 subscribers, rivals laughed.[76]

The telephone needs of New Delhi and Mumbai had been provided since 1986 by MTNL, the government corporation created in the enthusiastic days of Rajiv Gandhi's new government and his commitment to improve Indian technology. MTNL was intended to be the forerunner of telecoms cut free from monopoly control by a weary government. It was only in 2000, however, that the remainder of the government's telephone investment that covered the rest of India was turned into the government-owned Bharat Sanchar Nigam Ltd (BSNL). Its 350,000 employees, according to one critic, were 'not formally trained to be customer friendly, and the tag of an uncaring company stuck to BSNL ...'[77] The company boasted that it had the most extensive coverage in

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Act IV: Schools for Scandal

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India: 'Whether it is inaccessible areas of Siachen glacier and North-eastern region of the country, BSNL serves its customers ...'[78] Customers, however, did not share the sentiment. BSNL came to be known as *Bhaai Saahib, Nahin Lagega*— 'Brother, it won't be connected'.[79] BSNL's share of mobile-phone subscribers fell from almost 20 per cent in 2006, when its widespread infrastructure gave it advantage, to just over 12 per cent by 2011, by which time private competitors had built towers, laid cable and advertised relentlessly.[80]

Act IV: Schools for Scandal

'The present seems so nineteenth century', wrote the historian Richard White as he compared the frenzied enthusiasm for the Internet in 2011 with railway expansion 150 years ago. Both involved 'public' goods—land grants for railways, Radio Frequency allocation for telecommunications—vast sums of money and breath-taking corruption and political intrigue. At one point, an American railway president could marvel at the fact that he had 'two Senators of the United States—one of them the acting Vice President' ready to sell him their votes on a piece of railway legislation for $25,000.[81] The twists and turns in India's cell-phone story were not unique.

The scandals that originated in 2007 illustrated the way in which officials, corporations and politicians could benefit each other through collusion in the distribution of public property—in this case Radio Frequency.[82] Like the American railroads of the nineteenth century, India's telecom giants 'thoroughly insinuated themselves into the modern state. Through their lobbies and friendships, they could be found in [the United States] Congress, the legislatures, the bureaucracies and the courts'.[83] In similar ways, key players in the allocation of spectrum for second-generation telecommunications (2G) engineered improprieties in 2007 and 2008 that dwarfed the escapades of the 1994–5 auctions. The results would percolate through Indian politics and judicial systems for years. But by February 2011, the former Minister of Communications, A. Raja, had been arrested for corruption and held in jail, though not tried or convicted. Allegations about who knew what and when touched even the upright Prime Minister Manmohan Singh and tainted various politicians and television

journalists. So blatant were the breaches of process and administrative rectitude that the Central Bureau of Intelligence (CBI), India's national crime investigator, did something never done before: it raided a government ministry—the Ministry of Communications—to seize documents thought to provide evidence of corruption.

In 2007, with sales of mobile phones skyrocketing and the industry flourishing, the government announced it would licence the use of additional spectrum, previously reserved for national interests. More spectrum meant wider Radio Frequency roadways which allowed more elaborate services—video, music and so on—and enabled more voice calls to be made simultaneously. In a booming mobile-phone market, additional spectrum was immensely valuable. However, it was neither auctioned to the highest bidders, nor allotted on the basis of an applicant's proven competence. Rather, it was doled out on a spurious first-come-first-served basis. The price was unrealistically low: applicants paid the price that spectrum had fetched in 2001. This took no account of inflation between 2001 and 2007 or that in 2001 mobile telephony was in its infancy in India. But even more remarkable—comical had it not been so cynical and serious—was the deadline for payment and receipt of Letters of Intent (LIs) from the Department of Telecommunications. 'After keeping ... applicants on tenterhooks for almost three months', on 10 January 2008, the Department 'announced at 2.45 pm through a press release that LIs would be issued between 3.30 and 4.30 p.m. giving a window of only one hour'. Thomas K. Thomas, an experienced telecom journalist, described 'total pandemonium' with one company employing 'a hired goon to ensure that it was ... first to enter the gates'. One of the biggest winners was a real estate company called Unitech with little telecom experience; it gained licences for all twenty-two telecom circles or jurisdictions and soon sold more than 60 per cent to Telenor of Norway for four times what it had paid.[84]

By this process, spectrum was sold for bargain prices: a licence for the right to Radio Frequency covering the whole of India went for Rs. 1,651 crores (about US $300 million). The later inquiry by the Comptroller and Auditor General (CAG) estimated that an open auction could have raised a total sum of up to Rs 176,000 crores (i.e., 176,000 multiplied by 10 million) or close to US $40 billion.[85] The CAG report emphasised the spectacular disregard

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for rules, procedure and fairness. At short notice, with insiders apparently informed in advance, 122 licences were issued on a single day.[86] 'The entire process ... lacked transparency and objectivity'. The CAG report continued: 'Eighty five out of the 122 licenses issued in 2008 were found to be issued to Companies which did not satisfy the basic eligibility conditions set by the DoT'.[87] None of the thirteen companies that had been awarded the eighty-five licences had the paid-up capital required to qualify for a licence—in short, they were not large enough to finance the enterprise they proposed to create, and their claim to have such capital was 'false and fictitious'.[88] Although the timing of receiving Letters of Intent was made known only hours in advance, '13 applications were ... ready with Demand Drafts' drawn earlier—evidence, in the view of the Auditor-General, that someone had been 'selectively leaking' the crucial date and time.[89] A number of the lucky licensees, who had little or no experience in telecommunications, quickly sold chunks of their holdings and made substantial gains. The Auditor-General's report estimated that if the spectrum had been auctioned, it would have brought the government about five times the revenue that in fact received.[90]

More remarkable, the impugned Minister for Communications, A. Raja, and his department had disregarded written advice not only from the TRAI but from the Prime Minister himself. In January 2011, Kapil Sibal, the minister who replaced Raja, tried unsuccessfully to fend off the creation of a Joint Parliamentary Committee to probe the spectrum scandal. Sibal argued that the Prime Minister never actually differed with Raja over the policy for allocating spectrum. When Manmohan Singh wrote to the Communications Ministry about spectrum allocation in November 2007, the Prime Minister was, according to Sibal, only

> forwarding a summary of the suggestions received and requested the Minister to consider all these aspects carefully. This has been wrongly interpreted in the CAG report as a direction to act in a particular manner on the issue of pricing. The only direction given by the Prime Minister was that the Ministry should act in a fair and transparent manner and keep the PM informed.

The Ministry replied with justifications for its actions, which, according to Sibal, the 'Prime Minister accepted'.[91] A less sympathetic interpretation was that Raja and his ministry had brushed off a prime ministerial letter, confident that they could get away

with it. For a time they did, though Raja eventually found himself charged and in jail for more than a year after his arrest in February 2011.

In the long term, the scandal and its consequences may have forced the consolidation of the telecommunications industry. In February 2012, the Supreme Court revoked all 122 licences issues under the flawed process of 2008. It said, in effect, 'Start again. Re-auction the spectrum. Companies will surrender spectrum that was illegally acquired'.[92] The decision threw such companies, particularly those that had built networks and enrolled customers, into grim uncertainty. The circumstances presented various choices. Foreign companies could quit India and advise others to avoid India as a place for investment; Indian companies, and foreign companies untouched by the Supreme Court judgement, could welcome a reduction in the number of competitors and a chance to bid anew in whatever auction process governments might devise. By world standards, the fifteen telecom companies India supported in 2011 were more than most countries could bear.

The '2G scandal' had a further dimension. It brought together two opposite aspects of the cell phone: the immense value of Radio Frequency to great corporations and the cheap everydayness of the mobile. Its taken-for-granted quality led people to use their mobiles as if they were talking privately to someone face-to-face. A spectacular fallout of the '2G Scandal' was that conversations of a highly sophisticated but technologically naïve lobbyist, which had been recorded by the income tax department, were leaked to the media. The lobbyist had worked hard to see that Raja got the telecom ministry in the coalition government formed after the Congress Party victory in May 2009. She had talked regularly and all too candidly to television journalists, politicians and business people—on her mobile phone. Everyone involved seemed to think such conversations were private and secure.[93] In 2010, they became national public property (Chapter 8). The vast sums involved, and the blatant bartering of influence, threatened the coalition government, since the disgraced Minister of Communications was a member of the DMK, the second-largest party in the national coalition government after the Congress.

The scandals publicised what India's great business conglomerates had known for twenty years: vast sums were to be made

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from this invisible, intangible thing called Radio Frequency and because its allocation was in the hands of governments, it was crucial to have sympathetic politicians in charge of key departments. The scandals also underlined the way in which the mobile phone in less than ten years had become an object as familiar to hundreds of millions of people as a pair of sandals. However, as the protagonists whose phones were tapped discovered, it was easier to track mobile phone calls than footprints; records of phone calls did not get washed away in the first shower.

When Raja was being held in New Delhi's legendary Tihar Jail in 2011, his patron and political leader, K. Karunanidhi, chief minister of the state of Tamil Nadu, praised him as a man 'languishing in jail and paying the price for making mobile phones affordable to the people'.[94] It was the same attempt to win sympathy that Sukh Ram, the Communications Minister during the 1994–5 auction fiascos, had revelled in. Given the affection that voters in the switched-on state of Tamil Nadu had for their mobile phones, it was an ingenious ploy.

Contests over allocation of Radio Frequency spectrum, and graft arising from such contests, will continue as long as consumers show a passion to communicate in ever more elaborate and spectrum-hungry ways. Technicians will search for ways of packing bigger digital-signal loads onto radio-frequency roadways. And the people who run corporations and governments will struggle to broaden and dominate these roadways for the wealth that such control can generate. These contests went on among relatively few entrepreneurs, bureaucrats, politicians and technicians. Closer to the base of the Indian pyramid, what people took for granted like the blue sky behind a summer haze was that cheap cell phones were part of life in the first decade of the twenty-first century. To hundreds of millions of users, it did not matter which corporation provided the service or which politicians carved themselves a corrupt slice of the action. What was important was that there was a cell-phone service and that it was cheap and reliable.

'The telecom industry', Sunil Mittal asserted in 2005, 'is now employing 3.7 million people … The media industry, the advertising industry, the content industry, all are riding on the back of telecom …'[95] It was true that a cascade of occupations grew up to serve a new industry. Women and men who diced with billions

and lobbied politicians; Mumbai advertising agents and marketers who devised campaigns to sell phones; technicians who wrote software and positioned cell-phone towers; mechanics who built towers and property owners on whose land towers were built; distributors and shopkeepers who put phones in front of customers. And customers themselves—who found a myriad of uses for what once had been a squat, black, wire-connected, bakelite block locked in a box in the room of a social superior and good only for talking into. How these various interests, skills and initiatives connected with one another, and began to change practices and expectations, are the subject of the next chapters.

PART T

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