Abstract
A fascinating paper from 1961 contrasting the technical and general differences in providing telecommunications services in Europe, North America and Australia.

Introduction
This historic paper was published in June 1961 at a time when overseas fact-finding assignments were a privilege for the recipient. A detailed report was required by management upon return (around 12,000 words in this example) which was widely circulated within the Postmaster-General’s Department and ultimately published in the Telecommunications Journal of Australia (Volume 13, Number 1).

The actual overseas visit took place in late 1959 and was primarily to deal with technical matters in connection with the contract for the Sydney-Melbourne coaxial cable. The opportunity was also taken to investigate various aspects of external plant practices.

The paper is particularly interesting as it details the influence of non-technical factors on technical procedures. Relative wage and price levels are discussed and their influence on telecommunications manufacturing. For example, wages were higher in North America and the cost of materials handling equipment was lower, which encouraged a greater level of mechanisation in cable manufacture, compared to Europe.

The paper boldly examines various political factors which influence telecommunications infrastructure. For example, import restrictions on manufactured goods and raw materials in support of local industry are discussed. The report analyses the ownership of the telecommunications manufacturing industry in each country. It also contrasts the advantages and disadvantages of government or private ownership of telecommunications assets, and the flow-on effects to site acquisition, standardisation and interworking.

This is 1959 and well before the break up of Bell in 1984; however, the paper states the Bell System in Canada has a taint of American capitalism about it and is therefore unpopular on National grounds. It also cautions the reader on one hand about the dangers of uncritical acceptance of overseas matters, while, however, it cannot help but be impressed by the North American techniques.

The second half of the paper provides a detailed comparison between Australian and North American telecommunications infrastructure. This is a fascinating insight into the industry at the time and covers topics such as skilled tradesmen, exchange areas, subscriber services, buildings, installation and material supply.
The paper finishes with a short appraisal of the Bell System and the service provided to the public, namely: “A strong impression is gained of the Bell System to serve the public in every possible way. How this had changed by the breakup in 1984.”

Reference

"Down town" section is probably the most familiar one to the skyscrapers of Sydney and Mel-
bourne. The "down town" section is usually a little more crowded than the public area.

Climatic Conditions

This is an obvious point of difference between different countries, but it affects may be more far-reaching than would be expected. Two examples are quoted for the U.S.A.

The Climatic Level: This is the average number of days per year on which there is more than 40% of the available sunshine. In Australia and U.S.A. nearly all of Australia and the western part of the country, which is not subject to the climatic conditions of the U.S.A. is over the same limit, including the north-eastern part of the country. Much more can thus be grown in the U.S.A. in the open fields.

The Humidity in North America.

In all the Pacific coast area and the south-eastern U.S.A. outdoor construction work ceases during the cold months. This necessitates an increase in the costs as construction plants and organisation are required to be maintained throughout the year. It also explains the higher costs of construction work in the U.S.A. because the shorter construction season necessitates high working speed to complete projects in a reasonable span of time and also, con-
sequently, a higher labour cost. The shorter working season necessitated by the shorter construction period. High-speed construction work is inherently expensive as it requires larger and more men and materials than the type of construction work that would be done in the U.S.A. at the same time.

Political Factors

The one factor that is important is whether the telephone service is publicly or privately owned. Where it is under Government ownership it is traditionally a Department of the Central Government. As such it enjoys considerable legal privilege and its operating licence and regulations (i.e., the Act and Regula-
tions under the Act) have legal precedents. Over many of the other public utilities, the Act and Regulations being different in character. These laws are more like the National Labor Relations Act for Regional or Central Instrumentalities, State or Regional Departmens, State or Regional Instrumentalities, Local Govern-
ments or privately owned enterprises. This legal privilege gives the Post Office telephone service substantial advantage over the privately owned sys-
tems, which reflects in technical practices but it also makes them directly subject to the Central Government financial policy.

To quote some aspects where the priv-
ately owned Bell System suffers in comparison with the Post Office tele-
phone systems:

1. The acquisition of sites, properties, or rights to use property and the property owner and the System can be held to an exorbitant price for an essential site.

2. Local Governments place restrictions on such matters as the routing and alignment of duct systems, the siting of public telephone cabinets, etc.

3. Interference to telephone circuits by power circuits is a chronic problem everywhere. In Australia and the U.K., however, the powers of the Post Office are governed by Regulations designed to reduce interference to a minimum and the Post Author-
yes must build and maintain their plant to conform to the requirements of the Telephones Authority. By contrast in the U.S.A., under no obligation and the Telephone Industry has to take elaborate and expensive precautions to protect itself from power interference.

4. Telephone charges and conditions of service are determined in the U.S.A. by a large number of Regulatory Commissions. The Bell System is put to considerable expense in dealing with the many independent Regulatory Bodies that are not commercially or legally connected with the Bell Operating Companies. The Bell System is not obliged to follow the same principle and one Company may find itself dealing with several Regulatory Bodies each with its own individual rates. Government telephone systems are subject to parliamentary control but appear to enjoy considerable auton-
omy in detail matters. In the U.S.A., however, the Bell System is regulated in detail—for instance, in some Regu-
larity areas they are obliged to furn-
ish party line service on demand and are subject to intense competition against eco-

The Bell System does not enjoy a legal monopoly of communications. This can be a matter of serious conse-
areas where service cannot be guaranteed on demand, but everywhere else it is assumed that time is of the essence and the applicant’s service. Experience is that this policy involved only a slight risk. As there are now few barred areas it is evident that many applicants are connected one or two days after they apply.

Other reasons for this promptness, apart from the ready availability of capital and hence of plant, are—

1. The one supervisor controls the work at both exchange and switch-board end.

2. The use of a limnator associated with a form of outside plant installation which allows one man to run a length of drop wire to complete the line work, T.P., and in many parts of Australia is similar.

3. Pre-jumping at the M.D.F. is done night before.

4. All testing of the installation is done by the installer using a simple battery operated tester and an exchange ringback type test. If any component is faulty he faults the whole installation and leaves the premises. The new service is then treated as a faulty line and handled through the fault procedure.

5. Paper work is kept to a minimum by the installer reading his completion data from a tape recordor at the Service Centre. He does not submit a written ten-completion Order.

The Space Tap Desk does not check any new private subscriber’s service. It is employed for maintenance and fault testing only. This procedure was adopted as it filled the gap due to shortage of staff and equipment, but testing by the installer proved satisfactory and the saving in staff, equipment, and office space is such that the previous procedure, the same as present provision procedure, was not continued.

Another important factor is the positive drive to ensure that all work is completed on time. The efforts of all persons involved in these operations is maintained by the knowledge on the part of each person that his work will be reviewed and is only permitted a certain carry-over to the next day. e.g. The Board has set a policy that must clear 90% of its orders on the day the application is made and any continuous record is kept of its performance.

The procedure in Germany is that the Customer contacts the Cable Recorder by telephone while the application is made and the available, the Order, complete with installation data is prepared immediately and posted to the installation staff. The Board’s work is in contact with all applicants have service within five working days.

In England the average time for completion of order work in London is three weeks in the basic Division and six weeks in the Engineering Division. In the Provinces 65% of Orders are completed in one month, the majority being within 2.3 weeks.

Corresponding data is not available for Australia, but it seems unlikely that the performance would be as good as in any of these, even for areas where both exchange numbers and cable pairs are available. One reason is probably the use of a complete work at the subscriber’s end. In the other systems it takes 3-4 days and in the paper work which is insipidly complex resulting in a delay before the Order is in the hands of the Installation Staff. The other is the scheduling delay before the work force arrives at the subscriber’s premises. In the Australian system a third delay is involved while notification is passed to the Internal Staff that inwork is completed and finally there is the delay before the Internal Installer arrives at the subscriber’s premises.

Particularly by comparison with the Bell system three mean a lack of posi tive drive to expedite this phase of work which is probably the most important of all in regard to good public relations. Apart from the use of two separate steps to complete work at the subscriber’s end, control of the work, except in a number of cases, is by different tradesmen.

In Germany, in three different Divisions, during the high, office hours, for the M.D.F. job and Window Desk Work, Dead Work for the line work and Subscribers’ Installation for the instrument.—The lowest common level of authority is the Superintendent, Inspector, Metropolit.

A better arrangement, management would be the one Divisional Engineer in charge of the exchange and also of work on the M.D.F. This is the arrangement in New Zealand, where the M.D.F. is partitioned off from the exchange and is the responsibility of the External Plant Engineer. If testing is carried out by the installer then all work directly associated with the subscriber’s installation would be controlled by one Divisional Engineer.

MATERIAL SUPPLY

The scale of the problem in Australia is large than might be expected. England and Germany are territorially small and the material distribution and control problems is simplified thereby. The volume of plant handled in Australia is surprisingly high. Touting subscribers cable, which is a bulk in the U.K., is 700,000 pair miles per year and increasing by about 50,000 pair miles per year. The consumption in the U.K. is 600,000 pair miles per year. Bell System requirements of cable were estimated at 250 B.C.C. (billions conductor feet) for 1959 and 135 B.C.C. for 1960—11.6m. pair miles and 12.6m. pair miles respectively. The relative quantities of cable used in Australia, U.K. and U.S.A. are not proportional to the number of subscribers in the three countries and this suggests that the length of subscriber’s loop in the U.K. is less than in Australia and is substantially larger in the U.S.A. than in either —is this unimportant due to the large size of exchange areas in the U.S.A.

Figures were not obtained for Germany, but the output of the F. & G. P.L.C. plant at Cologne is about 330,000 pair miles per year. This is not the total output of F. & G. as they have plants in other parts of Germany. A factory producing 350,000 pair miles is a large one by English and European cable industry standards but Australian factories have a comparable volume of output.

In both the U.S.A. and U.K. the estimating of material requirements is a major difficulty and an absolutely satisfactory method of doing so has yet been developed. Shortly before I was in the U.S.A. the President of the American Telephone & Telegraph Co. had become so concerned with inaccuracies in forecasts, particularly under-estimates and subsequent shortages, that he had written a personal instruction that material on hand never be allowed anywhere below the highest levels in the Operating Companies (i.e. our State Administrations).

Both the B.P.O. and Bundespost work on negotiated contracts and the administrative machinery for placing orders is simpler than with the public tender system used in Australia. In the Bell System Electric Co. fulfills the role of Supplies organisation, Stores Branch and materials control and public tender as we know it is not in evidence. There are no administrative or official difficulties in ordering material quickly. Material is manufactured in Western Electric Co. factories or bought by the Company from outside suppliers to W.E. specifications. Stocks are held at warehouses located at suitable points throughout the country from which the Operating Companies draw as required. Western Electric Co. is part of the Bell organisation, it is required to show a profit in its own right and consequently seeks to maintain minimum inventories and the ability to supply any item on demand. The inability to supply an item means loss of profit on its sale to the Operating Company as well as the administrative penalties which the System will enforce if the Operating Company is unable to provide service for this reason.

The Bell System uses “long-term estimates” and “short-term estimates” of material requirements. These estimates originate in the Operating Company. “Long-term estimates” cover major works material such as switching plant and large cables which are normally supplied from the factory direct to the job. “Short-term estimates” cover day-to-day requirements of plant items, telephones, pole hardware and the like which are carried in the Western Electric Co. warehouses to meet demands from the Operating Company in the same way as the Stores Branch carries stocks to meet Engineering Division demands.