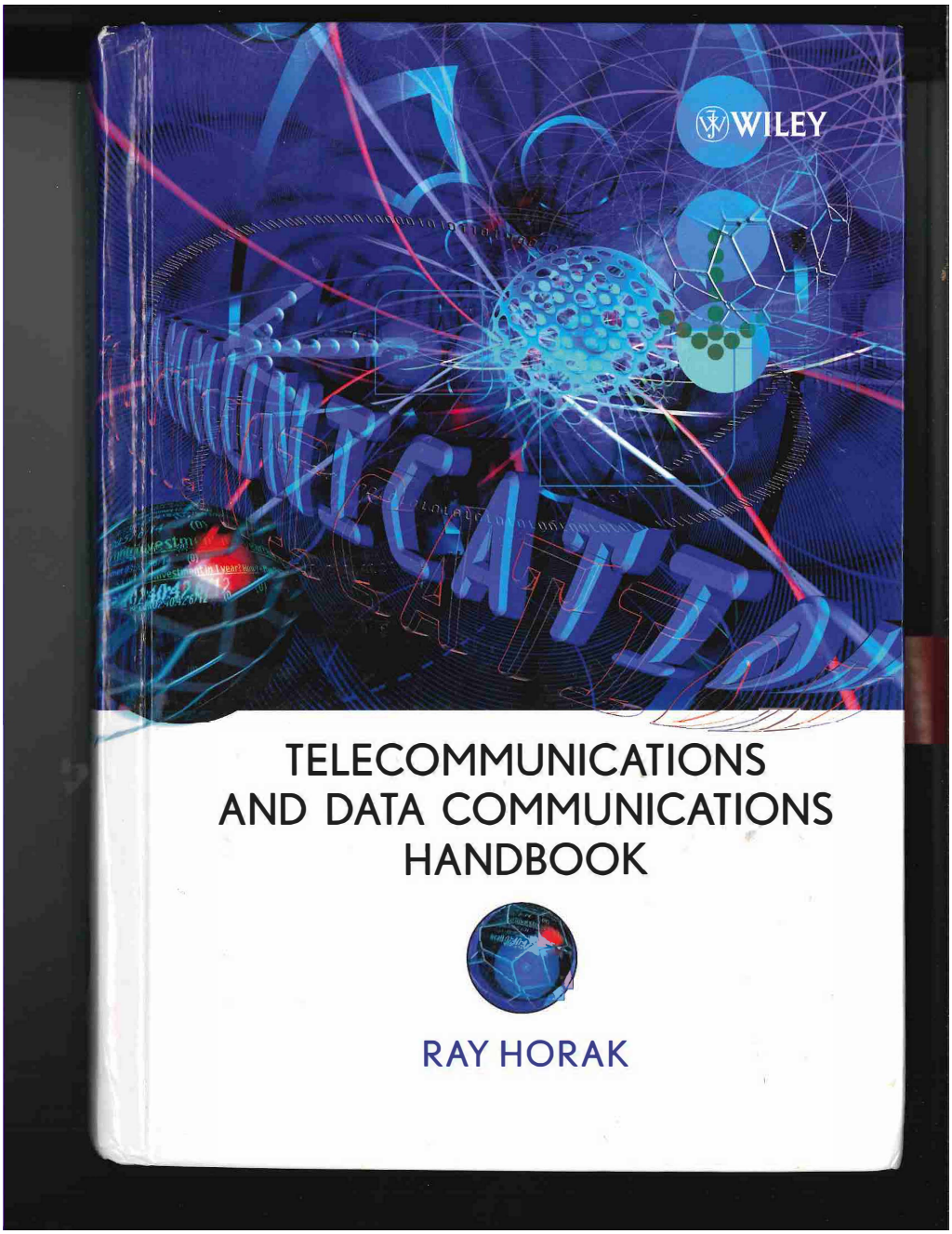

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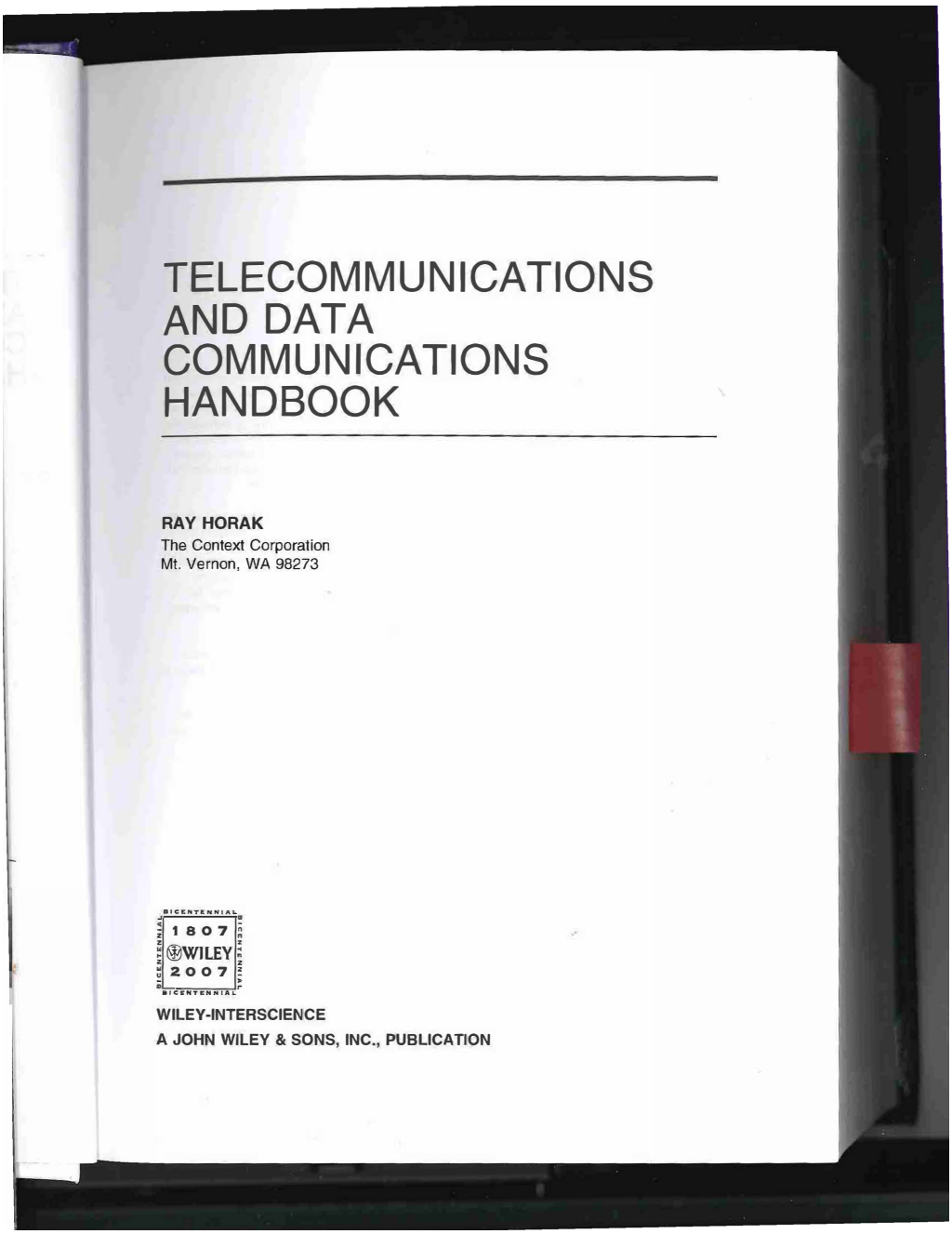

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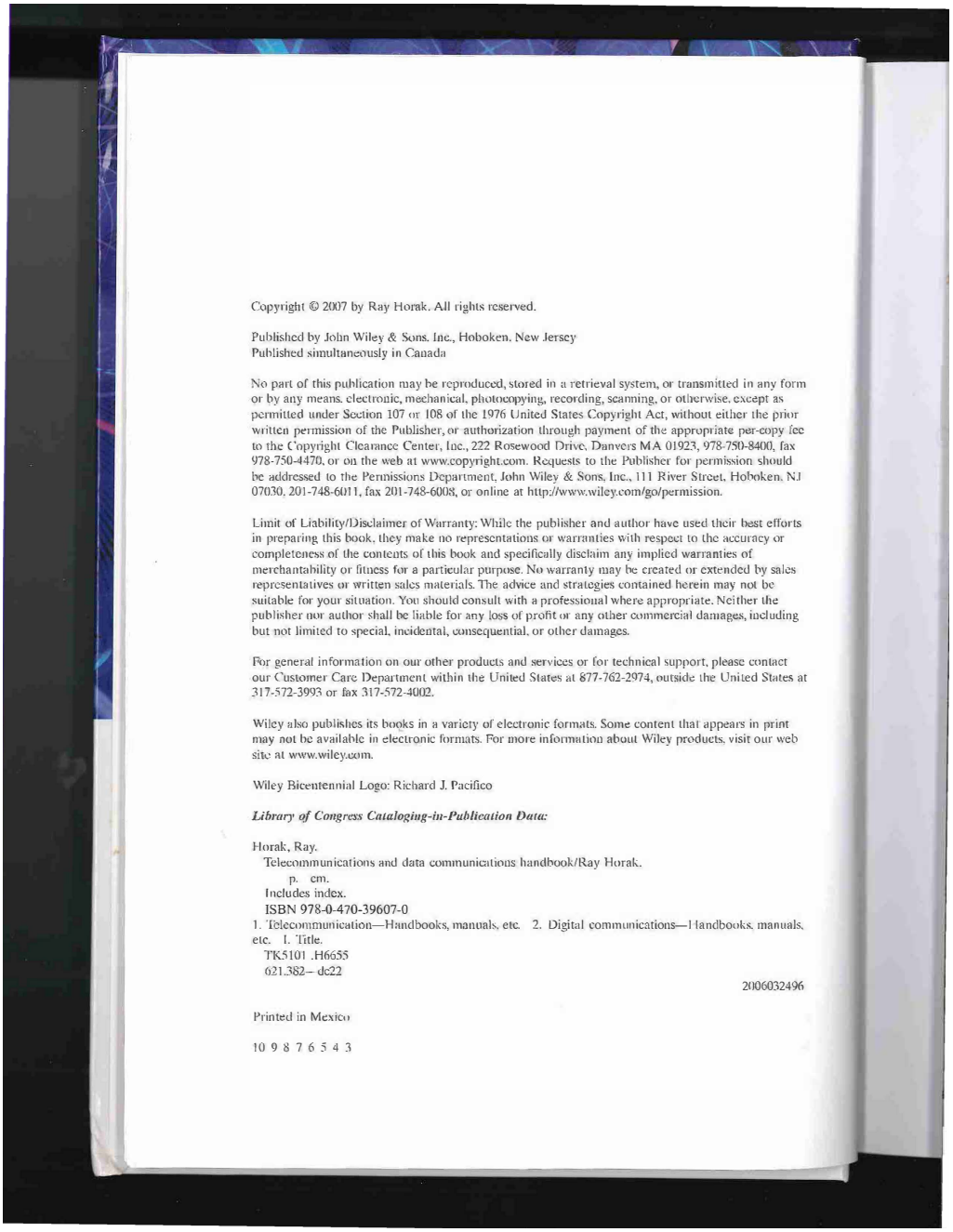

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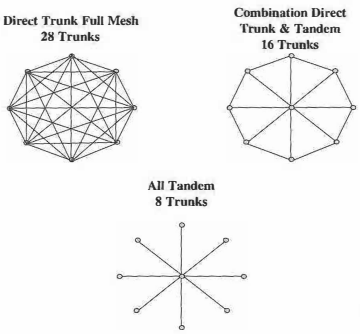

Figure 5.1 Network configurations: direct trunk full mesh, all tandem, and combination direct trunk and tandem.

exit. They also are known as *Class 5 offices*, the lowest of the five classes in the switching hierarchy, and *edge offices*, as they are at the very edges of the service provider's network. Manufacturers of COs include Lucent Technologies (5ESS), which previously was AT&T; Nortel (DMS), which previously was Northern Telecom; Siemens (EWSD); and Ericsson (AXE).

5.3.1.3.2 Tandem Switches *Tandem switches* are network switches that serve in partnership with lesser switches, linking them together. In other words, tandem switches serve no end users directly; rather, they serve to interconnect lesser switches. At the lowest level, tandem switches serve to link together CO switches over dedicated interoffice trunks. This approach can be used to form a fully interconnected and toll-free metropolitan calling area, for example. There are a number of basic network topologies, including full mesh, full tandem, and a combination tandem and direct trunk plan.

- **Full Mesh:** If all COs are interconnected through direct trunking in a full-mesh network topology, a large number of trunks and trunk groups are required, as calculated by the formula

$$X = \frac{n(n-1)}{2}$$

where n is the number of nodes to be interconnected. If there are eight nodes, as illustrated in Figure 5.1, the number of trunks required is calculated as

$$28 = \frac{8(8-1)}{2}$$

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