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2021-05-19 telephone turrets

Let's talk about a bit of telephone history. Again. Normally, I am more interested in the switching equipment and carriers and not so much in the instruments--that is, the things that you plug in at the end of the line. There are a few that really catch my eye, though, and one of them is of course the phenomena of the *trading turret*.

A trading turret is a specialized telephone-like device typically used by day traders. The somewhat useless Wikipedia article describes a trading turret as being a specialized *key system*, which is useless to most people today as key systems are no longer common and few people know what they are. Nonetheless, it is basically true. I will leave out much discussion of key systems here because I will probably talk about them in depth in the future, but a basic explanation is that a key system allows users at multiple telephone instruments to each access all outside lines. This was a popular setup for businesses that were large enough to need multiple outside lines but too small to have a dedicated telephone operator, from their introduction in the 1930s to the development of affordable small PABXs[1] in the '90s.

Key systems still occasionally appear today and the topic can become somewhat muddled because late key systems tended to have "PABX features" and many PABXs, especially in the IP world, have "key system features." But the basic difference can be explained something like this: a PABX connects multiple users to each line, while a key system connects multiple lines to each user. They were often used for similar purposes with the difference being largely one of implementation, but key systems do have their specific niches.

One of those is the item we for some reason call a *turret*. The term turret is used today almost exclusively to refer to the item made for the securities industry, a trading turret. These formidable tanks of phones often provide multiple handsets and speakers and are more or less identified by a touchscreen or large set of soft buttons that allow one-touch access to a large number of contacts.

These are superficially similar to a large set of line buttons such as is seen on the "receptionist sidecar" available for many business phones--an extra plug-in module that offers a big set of line buttons which can be configured as speed-dials or even one-touch unattended transfers, so that a receptionist can easily transfer calls or call up for people without having to dial extensions all the time. However, turrets are more than just phones with a lot of line buttons.

It kind of raises the question: what is a trading turret? What really differentiates one from, say, a digital PABX phone with a sidecar?

This is just the kind of thing I contemplate in my private moments, but the issue came

to the front of my mind when someone provided a mailing list I am a member of with an interesting document [2]. It is the 1974 Bell System Practice (BSP, basically a Bell System standard operating procedure) for the SAC Main Operating Base Turret. BSP 981-202-100 if you are particularly interested.

The document describes a desk-wide system with ten color-coded handsets used at a Strategic Air Command base to give a communications operator quick access to primary and redundant versions of multiple communications lines. For flavor, two of these handsets were red and corresponded to primary and secondary four-wire leased line circuits used for the SAC Primary Alerting System, used to deliver emergency action messages. Here we have a *real* red telephone, but not to Moscow.

This makes it clear that the term "turret" is not specific to the finance industry, which was actually a bit of a surprise to me. Where, then, did we get the turret as a type of telephone instrument?

The first usage I have found is the Order Turret No. 1, introduced by the Bell system sometime in the early 1930s (exactly date unclear). The No. 1 is essentially a small manual (cord-and-plug) exchange that accommodates multiple user "positions." A series of subsequent Order Turrets, up to at least the No. 4, were produced in the first half of the century.

I was initially a bit unclear on the application of these devices (I found BSPs on them, but these have a great way of describing maintenance and repair in detail without ever saying what the thing is *for*) until I found an article in the Bell Laboratories Record, an employee magazine, of 1938. The article describes the use of the No. 4, now a more compact design which can be scaled to an arbitrary number of operators, as it was used at Macy's. It is called an Order Turret, it turns out, because it is used to place orders.

The system looks something like this: 20 (or another number, but we'll say 20, which was the capacity of the apparently common Order Turret Number 2) outside lines are assigned sequential numbers at the telephone exchange with busy fall through such that a call to the first line, if it is in use, will connect to the next line, and so on until a free line is found. At the turret, the call "appears" on a jack in front of each attendant. Whichever attendant is not currently busy can insert a plug to answer the call. In this way, the turret system allows a pool of attendants to collectively answer a pool of incoming lines.

But there's more: these attendants are taking telephone orders in a department store, where the actual stock is out on the floor in various departments. So if a customer asks about a particular item, the attendant can insert a plug into a jack for an internal line to that department, ringing a phone on the floor so that the attendant can speak with a salesperson to confirm availability and have the item set aside. The turret is used not only to answer calls, but to simultaneously manage multiple calls between different parties.

So far as I can tell, this is the defining feature of a *turret*: a turret isn't just used to handle multiple lines (that's a key telephone). A turret isn't just used to have rapid access to many speed dials (that's a receptionist sidecar). A turret is used to make *multiple simultaneous calls*, by someone who must quickly relay information between multiple parties. Like the telephone order attendant at an old-fashioned department store, the person on communications duty at a SAC command, or an investment banker.

This explains of course why both legacy and modern turrets often feature multiple handsets (the original Order Turrets did not, but the attendant wore a headset that they would move between jacks instead). As telephone systems have become more sophisticated, turrets have as well, and modern turrets often use IP connectivity to provide a mix of features like squawk boxes (permanently open conference lines), presence information, and a feature with various names (sometimes called automatic ringdown although this is not quite accurate) that allows one trader at a turret to call another trader at a turret with no ringing--the call just connects immediately, much like an intercom. All of this can be done very quickly, because the turret provides a large set of pre-programmed buttons for all the people the user is likely to want to contact.

You can already see that the application I've described for these early turrets, of order taking, could be handled differently. An obvious enhancement is to actively distribute calls to available attendants instead of presenting calls at all attendant stations and waiting for someone to pick up. Indeed, the Order Turret No. 4 did exactly this, actively "pushing" each incoming call to an available attendant. This increase in sophistication, to actively routing calls, really blurred the line between the order turret and the PABX, which Bell was well aware of. The No. 4 was less an order turret in the sense of previous designs, and more just a *feature* of a PABX.

The order lines, instead of being dedicated lines going straight to turrets, were just the normal incoming lines of the business PABX. The business PABX allocated calls to attendants sitting at the No. 4 stations. This is basically how modern inward call center systems work, and it seems that over time the concept of the "order turret" faded away as these call center queue systems became just another feature of a PABX.

Turrets found few niches in which to hold on. The SAC command turret tells a bit of a story about the close relationship between the Cold War defense complex and the Bell System. Large portions of SAC infrastructure were essentially contracted to AT&T, and so AT&T apparently drew on their background with order turrets in developing the concept for the SAC communications system, which in its totality consisted of a dizzying number of two- and four-wire leased lines and radio links unified by these eight-foot-wide turrets. They even controlled the sirens.

No doubt there were other turrets designed by Ma Bell, although I have struggled to find them. The Order Turret series seems to have died away by the mid-century, but the SAC command turret likely remained in use into the '80s at least. Can we find any others?

An obvious application for a turret-like system is in police and fire dispatch, where in many smaller communities emergency calls were taken directly by the dispatcher who then had to relay information on the radio. Indeed, various vendors have sold telephone equipment for dispatch and public safety answering points (PSAPs, where 911 is answered) described as turrets, but the terminology does not seem to have caught on as strongly in that field. I would suspect this is because radio equipment was often more important in these early dispatch centers than telephone, and indeed the complex communications consoles in public safety dispatch centers usually come from radio vendors (e.g. Motorola) rather than telephone. Radio vendors usually just call these "dispatch consoles" and they have gone through a similar evolution from electromechanical to IP.

There is one exception which stands out: in the city of Boston, the central dispatch office is apparently colloquially referred to as "the turret." The recordings of police radio traffic, sometimes used as evidence in court, are often referred to as

“turret tapes” in Massachusetts. I am not certain that the terms are related but it would seem likely; I would speculate that at some point in history the concept of dispatchers *using* turrets turned into dispatchers working *at* the turret.

The funny thing here is that I’ve gone on for a long time without addressing my original interest: why is it called a turret? Well, after all the digging through BSPs and newspaper archives and a whole detour through court records, I still haven’t quite answered that question. No one seems to have written down an etymology.

All I can offer is this theory: while turret most directly refers to a tower, through the path of gun turrets it has also come to refer to something that rotates (e.g. in the case of a turret lathe). The original Order Turrets consisted of a rectangular table around which four attendants would sit, two on each side. Perhaps they were called turrets because the attendants sat in a circle and the duty to answer the next call rotated around.

Just a guess.

[1] Today we usually just use the term PBX, for Private Branch eXchange. I specify PABX, for Private *Automatic* Branch eXchange, in the historical context because for decades the term “PBX” referred mostly to manual boards with dedicated operators, which used to be common in businesses, hotels, etc. A PABX is an automatically switched system, basically the PBX equivalent of the introduction of dialing.

[2] I am leaving the person and list here anonymous out of respect for the community’s privacy, although it is an excellent resource if you’re interested in these topics and I feel a bit bad for not giving credit. The name of the list rhymes with, uhh, OldDoorBombs.