TELECOMMUNICATIONS HISTORY GROUP

CONNECTIONS news

www.telcomhistory.org 303-296-1221
Summer 2025, Vol. 32, no. 2 Dave Felice, editor

A message from our director

Everyone at THG is busy putting together the plan for our new museum: *Connections Museum Colorado*. We will be opening hopefully by 2026. Stay tuned. Read more about the plans in this edition.

Here in Denver, one of our volunteers, Jon Berquist, is working on photographs. Many interesting photos have surfaced. It's a tough job to process the over 100,000 photos we have, but very interesting. Jon is doing a fantastic job. The photos show the changing wonders of telecom over the years; jobs being accomplished, the vehicles used, the tools, the many types of jobs needed to make it all work and the folks doing the work. The different photos show the progression from the operators to the industry as we know it today.

In Seattle, they are at work planning the move of equipment and artifacts from Oregon to Colorado. They are still giving many tours and working on new exhibits as well.

The THG volunteers are fantastic. Their work is very much appreciated, and they are all a fun group to work with. If you have the time please come join us, we NEED YOU!

Have a wonderful summer and thank you for your continued involvement in the fascinating history of telecommunications.

Sincerely,
Renee Lang, Managing Director

One of the interesting phones given to us. Who thought of a tape measure flip phone?

Mini museum adds to theatrical event

When a community stages a play that pivots on the protagonist's use of the phone, it's fitting the event be accompanied by a display of telephone history.

The THG *Connections Museum* provided an exhibit in a historic building to go with the production of *Dial M for Murder* by The Village Theater in downtown Issaquah, Washington. The display was set up at a renovated gas station, known locally as "Historic Shell." The town is located in a mountainous area along Interstate 90, fifteen miles southeast of Seattle.

The temporary museum gave "a nod to the play and the roots of modern communications technology," said Christina Bruning, President of the Downtown Issaquah Association. The exhibit took visitors "back to the time of party lines, rotary phones, and switchboards," Bruning commented. "The displays are interactive with real working vintage phones."

A functioning Strowger telephone switching system highlighted the display set up by Connections Museum volunteers. Board President Peter Amstein re-told the story of how Almon Strowger of Kansas City designed the mechanism the late 1880s, when he became frustrated with manual operator connections.

In 1954, Alfred Hitchcock made the original London play into a well-known movie. Promotion for the film prominently shows a similar clickety-clack step-by-step mechanical switch.

Originating in 1952, *Dial M for Murder* is the story of how a man tries to arrange the killing of his adulterous wife. Frederick Knott wrote both the screenplay and successful stage play.

After the Historic Shell was no longer a gas station, the building became a feed store. Now it belongs to the city of Issaquah and is managed by the DIA. Just a block away is the original Bell System Issaquah Central Office from the early 1900s. Initially, the CO must have held just one or two operator positions. The building has since been converted to a psychiatrist's office and a glass studio. (https://issaquah.catalogaccess.com/photos/11591)

The THG display on Front Street North was open to visitors before The Village Theater Main Stage shows and after matinee performances. The downtown association also suggested visiting the *Connections Museum* in Seattle and the Issaquah History Museums.

THG plans a new museum in Colorado

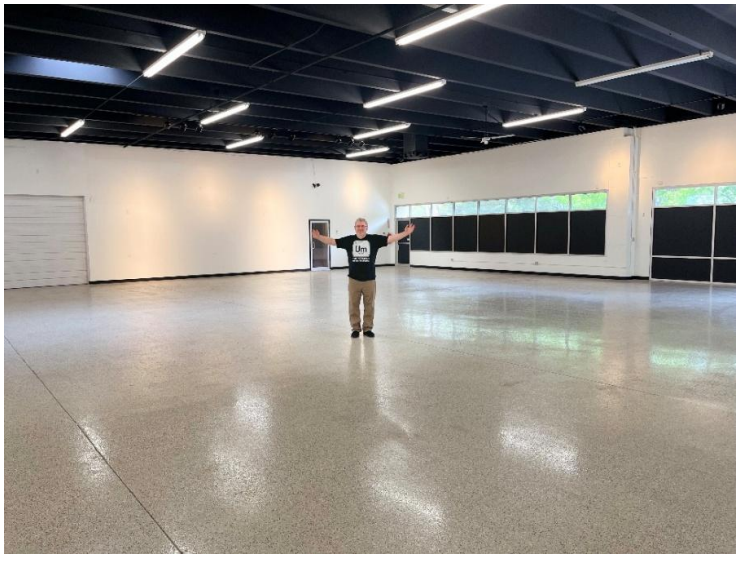
The new *"Connections Museum Colorado"* is coming to life. As promised in my message in the Spring issue of *Connections News*, here's a more complete story about our plans to create a new museum in the Denver area.

After several months of looking, we were able to purchase a building at 4700 West 60th Avenue in Arvada, just north of the Denver city line. The building was formerly a private automobile museum, and the space is well-suited for our purposes. The site has good access by road, good parking and is right next to the Goldstrike RTD light rail station, all of which will make the museum easy to reach for potential visitors. The building is also fully accessible, and we will make sure the exhibit layout is suitable for guests with mobility devices. The Telecommunications History Group Board decided that we will use the name *"Connections Museum Colorado"* for the new facility.

The core of the new museum collection comes from Phil McCarter, who's entire 30-year collecting effort has been has now been transferred to THG. McCarter, who has his own YouTube channel under the handle SxSPhil, created an amazing private museum in Jefferson, Oregon. His switch room includes a large Step-by-Step switch, a No. 3 Crossbar, a North Electric CX-100, and a Stromberg Carlson X-Y system. McCarter has already started dismantling his switch room to get it ready for the move.

There is also a spectacular collection of telephones in every imaginable color and style, manual switchboards, phone booths, and other items that are too numerous to list. In addition to the McCarter collection, the new museum will allow us to display many artifacts which THG has in offsite storage in both Seattle and Denver.

We anticipate being able to create a museum to rival or exceed the very popular one that THG already operates in Seattle. We will have no problem filling up the 7500 square feet in our new space with interesting exhibits, and it may eventually be expanded to as many as 15,000 square feet.



Peter Amstein in the currently empty expansive space

A crew of volunteers from the *Connections Museum Seattle* was in Denver the week of May 19 to interview potential volunteers who live in the Denver area. Sixty-three people responded to our call for volunteers so far, and we met with thirty-four of them. We are optimistic that we will be able to create a dynamic volunteer corps in Denver like the one that currently operates the Connections Museum in Seattle with people from diverse ages, backgrounds, and interests.

There is still much work to be done to get ready. It will begin with the installation of overhead auxiliary framing and cable trays – a task we need to accomplish before the actual switches and artifacts arrive.

With our many years of experience offering docent-guided tours in Seattle we are excited to start with a clean slate. It will allow us to create an optimal visitor experience in the new museum. We have created a preliminary layout of the floor space, but many details of the exhibits remain to be worked out. With some luck and hard work, we hope to have most of the artifacts installed and ready to show off by the end of this year. But the exact schedule details also remain to be determined.

Because the space came with a counter and stools, the team has been having fun with naming ideas. The area with the stools will be known as the Number 1 Cross Bar. An actual No. 3 crossbar switch will be on display adjacent to it. Drinks available (non-alcoholic) will include "The Twisted Pear" and "The Lime Finder." THG volunteers Claire and Sarah are shown in the refreshment area.

We are excited at the prospect and also a little bit nervous about the amount of work that will be involved in completing this new museum. But we anticipate that when it is done and open to the public it will place THG as the clear worldwide leader in telecommunications history preservation and education.

THG's existing small museum in the 1929 Mountain States Telephone and Telegraph Company Headquarters building in downtown Denver will remain where it is, primarily serving as a benefit to employees and their visitors in that building. *THG Archives* will also remain in their existing location on Champa Street nearby.

If any of our *Connections News* readers know of additional historic artifacts or equipment in the Colorado area that you think should have a space in the new museum please reach out to us at info@connectionsmuseum.org. We look forward to welcoming you in the new *Connections Museum Colorado* when it is ready to open, and of course we will update our readers on the progress in future editions of the *Connection News*.

—Peter Amstein

Growth brings social and dialing changes

The introduction of overlay Area Code 564 signals a need for yet more numbers. In a sense, this marks the end of an era beginning when the original 1947 Area Code 206 provided a cultural reference for Western Washington. The 564 overlay is unusual because it applies to other nearby calling locations in 253 (Tacoma), 425 (East and North of Lake Washington), and 360 (other western locales). Ten-digit dialing has been required for local calls since 2017.

Current numbers won't change, but 564 numbers are being assigned to new customers in the large zone.

Originally, 206 covered the entire state. The North American Numbering Plan Administration (NANPA) assigned 509 to the eastern two-thirds of Washington in 1957. In 1995, Area Code 360 was carved out of 206. Even after that split it was necessary to introduce 253 and 425 to keep up with demand for new numbers. In each of those cases, customers who were previously in 206 had to accept a change in Area Code.

Area Code 509 is also expected to run out of numbers by mid-2026. A new overlay code has not yet been selected. However, decades of technical advances in the telephone system now make overlay codes easier to implement than splits.

Some Area Codes have actually gained prestige as geographic markers, especially for mobile phone users, even as the once strong link between place and code diminishes.

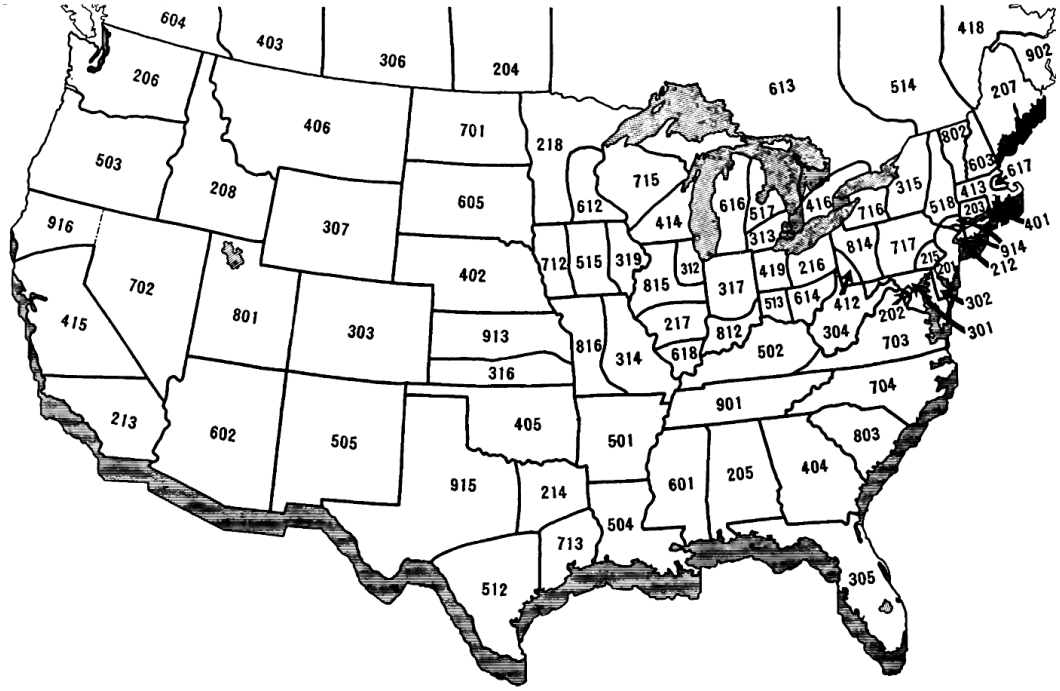
In New York City, with a large and diverse population and extensive territory, a caller might be classified by a specific neighborhood or borough, based on Area Code. Those with the original 212 Area Code are considered long-term residents of the central city.

A similar situation exists in metropolitan Denver. Area Code 303 is seen as a designation of a stronger local connection than the much newer 720 and 983 codes. Implementation of 720 was a split. Some numbers, especially in city government, had to be changed to Area Code 720. An online lifestyle magazine adopted Colorado's "303" as the name of the publication.

Likewise in Los Angeles, the original Area Code 213 and later 310 are considered more "prestigious" than some newer numbers. In 2024, LA got yet another code of 738 to overlay 213 and 323. San Francisco Area Code 415 still represents a large segment of the population associated with the technology community.

Area Codes are cultural as well as functional. *The 312* is the name of 2017 movie using Chicago baseball as a metaphor for personal growth. "213" is the name of a hip-hop musical group from Long Beach, using the original Los Angeles code. A luxury apartment complex in Washington, D.C. is named "The 202."

One of the most iconic Area Codes is "The 808," a reference to the state of Hawai'i. Area Code 808 is one of the original 86 codes, and was assigned to Hawai'i at statehood in 1957. "808" has long been used as a shorthand designation of the islands. Because the Area Code covers the entire state, 808 is considered a sign of unity. The single Area Code makes calling a little easier for residents and visitors.



Original 1947 Area Code assignment map

The formal name for an Area Code is "Numbering Plan Area (NPA)" in the North American Numbering Plan (NANP). The NANP, adopted first in 1947, attaches a three-number prefix to all seven-digit numbers. Long Distance operators had already used NPAs, but public education was necessary to implement Direct Distance Dialing (DDD) in the 1950s and 60s. NPAs were phased in with the installation of #4 Crossbar Toll Switching systems in 1948 and later. After careful testing, Englewood, New Jersey got the first DDD service in 1951, using Area Code 201.

Although the Area Code primarily designates a geographic location, some NPAs such as 800, 900, and 200 denote special services. NPAs do not allow 0 (zero) or 1 (one) in the first position and originally required a 0 or 1 in the second position. Codes with 9 (nine) in the middle position are reserved. The numbering plan covers the U.S., Canada, and most of the Caribbean. The original 809 Caribbean code has also been split and overlaid.

Like Washington State, western Colorado will have its 970 Area Code overlaid with 748 in the summer of 2025. By the end of the year, there will be 480 NPAs in use.

Area Code 907 covers all of Alaska, except the border town of Hyder. That community uses one of four British Columbia codes corresponding to the assigned Central Office number.

Several three-digit numbers, such as 789, are still available for geographic assignment. Code 950 can't be used because it was reserved for inter-exchange carrier use.

Some states still have a single NPA. These locations include Hawai'i (808), New Hampshire (603), Vermont (802), Wyoming (307), Montana (406), and Rhode Island (401). For those who never had a landline, Area Codes are less of a marker of where they live now and more of a sign of where they got their first cell phone.

St. Pierre and Miquelon, the French Territorial islands off the eastern coast of Canada, are an international location, not considered part of North American calling.

Original story by Dave Felice, with material from personal experience and multiple sources

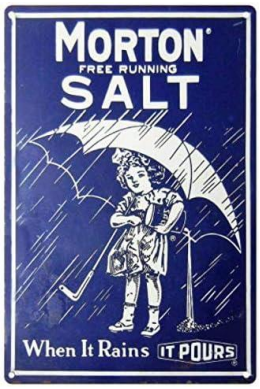
Search for printing telegraph brings innovation

From prehistoric Lescaux cave paintings to the present, the human quest to send messages continues with modern e-mail and text technology. A Greek messenger died after running from Marathon to Athens to tell of victory over the Persians; Paul Revere rode through the night to tell of the British invasion of Boston; Pony Express riders sped from California to Missouri.

Written messages have been sent for centuries by physical delivery of indeterminate time. The arrival of the telegraph in the mid-1800s, provided a faster way to send messages by using electrical wires. But, both letter mail and telegraph depended on final hand delivery.

Telegraph service, primarily from Western Union, was expensive. Telegram messages charged by each word and led to some terse writing styles, not unlike the text messages of today. The service also required skilled telegraphers who knew Morse code at both ends.

Almost as soon as telegraphy began various inventors began looking for ways to create a printing telegraph that would automate conversion of a written message to and from electrical pulses on the wires. But none of the first 50 years of efforts on this were particularly successful.



In 1902, prosperous salt merchant Joy Morton became interested in the problem. Morton hired mechanical engineer Charles Krum and agreed to finance development of a satisfactory printing telegraph. Krum's son, Howard, newly graduated with a degree in electrical engineering, joined the effort. Their first prototype was tested successfully in 1908. The printing mechanisms of modified commercial typewriters were not up to the rigors of the job, so the team designed their own special typewriter mechanism. Morton and the two Krums combined their names to call this new enterprise the Morkrum company.

Looking for a faster way than bicycle messengers to provide stories to newspapers, Associated Press engaged Morkrum to design a new distribution system. This way, AP could send copy to all the newspapers in New York and Philadelphia from a single keyboard in New York City. This was the start of the news wire. By 1915, United Press International also operated a wire service. Reuters (Britain), and Agence France-Presse soon followed.

Morton's son, Sterling, joined Morkrum in 1917 as president. By the mid-20s, about 80 percent of all telegrams used Morkrum's teletypewriters instead of Morse code. In 1925, Morkrum merged with Kleinschmidt, a competing maker of teleprinters. Renamed for its product, Morkrum-Kleinschmidt became Teletype Corporation in 1928.

In 1930, AT&T purchased Teletype Corporation for $30 million in stock and it became a subsidiary of Western Electric. In a unique mode of operation, Teletype was a separate Western Electric entity. Teletype's dedicated sales team could provide equipment outside the Bell System. Sterling Morton left Teletype and went back to selling salt.

In 1931, AT&T introduced Teletypewriter Exchange Service (TWX). Customers could rent a teletype machine, and connect directly to other TWX devices over AT&T lines. Written messages would bypass Western Union completely.

For the first 30 years, access to the service was provided by operator-assisted manual switching. Operators at switchboards looking very much like those for voice telephone made the connections between TWX subscribers. TWX service was upgraded in 1962 to a direct dialing system, with regular telephone dials added to the customer's teleprinters. This, plus other improvements, reduced connecting time from about two-and-a-half minutes to 30 seconds. The Bell Labs Record from July 1962 has a long proud story about this innovation.

For heavy use between multiple sites, AT&T also provided private line TWX connections with teletypewriters at distant locations. The Bell System itself used this service to facilitate written communication between larger central offices.

The Connections Museum in Seattle displays an extensive collection of working teletype machinery, along with some switchboards and test equipment used behind the scenes. Visitor interest shows this is an extremely popular exhibit. Although museum guests probably have an inkjet or laser printer at home, the mechanical nature of the old Teletype machinery seems more thrilling. THG volunteers have configured a machine to print current day AP stories from the internet. At many broadcast stations, listeners heard this unmistakable clack-clack sound at the beginning of a newscast.

Teletype Corp also pioneered one of the first recording media for computer data, punched paper tape. A short piece of paper tape with their name and some message punched as a series of small holes is a popular souvenir for younger visitors to our museum.

An early Underwood typewriter, converted for use as a teleprinter, is on static display because these turned out to be quite delicate and unsuitable for nonstop use.

A workhorse of the museum's operating display is the very rugged Teletype Model 28. When the Navy was using the earlier Model 15s, and the ships rocked at sea, the heavy print baskets were liable to slam around and garble the message. So the Navy asked Western Electric for a better machine. Western introduced Model 28 (shown at right) in 1951.

Though the machines themselves are quite heavy, the Model 28 has a lightweight print mechanism with a replaceable type element that is a forerunner of the ball element in the famous IBM Selectric typewriter. The Model 28 was originally available only to the Navy, but eventually became one of Teletype's most popular commercial models.

A pair of Model 28 ASR (Auto Send-Receive) machines served the ends of the famous Moscow-Washington hotline installed after the Cuban missile crisis. Although often dramatized as

a red phone on the president's desk, the hotline was actually a Teletype connection between the Pentagon and the Kremlin.

Another museum display is the teletype Model 33 ASR, also originally designed for the Navy. This model became extremely popular with computer hobbyists in the 1970s. Reasonably priced used machines worked with the ASCII coding system instead of the older Baudot system (used by Western Union and the international telegram industry). There is a well-known photograph of a young Bill Gates looking on, as Paul Allen sits at a Model 33 Teletype.

Western Electric used Teletype Model 35 machines as the central office technician's console for its first generation of electronic switching systems. A THG volunteer recently restored a Model 35 for the museum's No. 3ESS telephone switch, replacing a modern CRT terminal which was functional but not authentic.

Teletype and other companies began producing what's called the glass teletype in the 1980s. This is a keyboard and television-like display, with an optional printer. This was the forerunner of the computer terminal which ultimately led to desktop computing as we know it. In the photo, volunteer Kevin Hannon sits at the museum's working Teletype Model 40 "DATASPEED" glass TTY.

There are several Lorenz machines for museum visitors to appreciate. These license-built versions of Teletype designs were made in Germany from the 1930s until the 1950s. Lorenz teleprinters were sold all over the world except in the United States. The Canadian Pacific Railroad first used one of the Lorenz machines on display.

Model 15 was patented in 1930. Many were made during World War II, and production continued until 1963. These durable black receive-only machines were still in use at broadcast stations as late as 1978. By the 1980s, newsrooms converted to dot-matrix printers.

After Divestiture in 1984 Teletype Corp became AT&T Teletype. By 1990, AT&T wound down the operation and closed the dedicated teleprinter business.

With long distance voice communications, the Bell System's role in printed transmissions is an important part of the story the Telecommunications History Group works to preserve and share.

Story by Peter Amstein, with information from Connections Museum documents and multiple internet sources. Page nine of the Autumn 2022 Connections Newsletter shows an example of UPI Teletype text, https://www.telcomhistory.org/autumn2022.pdf

In this photo from the White House Historical Association, two news Teletype machines are in soundproof white cabinets behind President Lyndon Johnson in the Oval Office. The president is on the phone, watching TV.

Pay phone and music intersect

In his 1973 recording "Operator (That's Not The Way It Feels)," folk-rock singer Jim Croce uses bygone pay phone imagery to lament a failed romance.

Presenting the caller's side of a conversation, the song opens with a plea: "Operator, well could you help me place this call? See the number on the matchbook is old and faded." The singer is upset and trying to find his former girlfriend "...living in L.A. with my best old ex-friend Ray."

The caller tells the operator he wants to make the call to say he's fine and getting over the loss, "...but that's not the way it feels." He again asks the operator for help because, figuratively, something in his eyes prevents him from reading the number.

The third verse contains a memorably iconic lyric as Croce sings he'll forget about the call, the operator has been kind, and "...you can keep the dime."

Croce got the song idea when he was in the National Guard. He watched soldiers standing in line in the rain, waiting their turn for a three-minute pay phone call, which cost 10-cents. "It seemed surreal that so many people were going through the same experience and to see it happening on the telephone, talking to a long distance operator just registered," said Croce, a native of Philadelphia.

The singer is known for complex acoustic guitar playing. In 2000, Martin Guitar Co. of Nazareth, Pennsylvania made 73 instruments like the one Croce used. Each D-21JC or D-21JCB guitar had an uncirculated 1973 dime embedded in the third fret fingerboard position. The commemorative guitars honor what the company calls Croce's "lasting contribution to acoustic music." Each instrument is signed inside by Ingrid Croce, Jim's widow and musical partner.

Also remembered for his songs relating to a diversity of people, Jim Croce died in a plane crash in Louisiana at age 30. Ingrid says the popularity of "Operator" has endured because many people identify with trying to recover from an unsuccessful relationship. She says numerous operators told her how much they loved the song and felt as if it were written specifically for them.

Pay phone specialist Mike Davis of Long Island says Croce would have been singing about a phone with three coin slots operating on a "coin first" process. A coin, usually a dime, had to be deposited to connect to dial tone for operator and local calling. Davis provided a picture of such a phone from Philadelphia. When 9-1-1 calling was introduced after 1968, circuits were changed to provide dial tone first for operator-assisted, local and emergency calls.

Earlier in the modern era, local calls cost a nickel. The 10-cent call lasted from about 1948, depending on the phone company, until being increased to 25-cents in the 70s. After that time,

newer phones had only one coin slot. The conversion to single slot sets took place over time based on the individual phone companies.

Davis explains that the coin first phones worked on what's called a ground start. A coin drop would ground one side of the line, triggering the Central Office equipment to provide dial tone. "People were always figuring out ways to beat the pay phone; the phone company was always trying to catch up," Davis remarks. "By sticking a pin in the center hole of the receiver and many other ways, people determined how to create the ground and get dial tone without charge."

Coincidentally, Mike Davis says "Operator" is one of his favorite recordings. "I really liked Jim and his music," he comments. "It was sad when he (Croce) died (in the plane crash)."

Dime part of American culture

A ten-cent coin and the pay phone have a place in the North American vernacular with the expression "Drop a dime (on someone)."

Long before cell phones, the phrase referred to using a public phone to anonymously inform authorities of suspicious activities. "Dropping a dime" can also be used as a warning, betrayal, or accurate ball handling in a sporting event. Other dime-related expressions describe very common items as "dime a dozen" and "dime bag" refers to $10 worth of illegal drugs. "Doing a dime" means serving a 10-year prison sentence.

Formerly in common use to activate a coin phone, the dime is one of the few coins known by a name in the U.S. and Canada. In all other countries, the coin is called by its denomination, such as 10 pence or 10-cent piece. A dime is the smallest diameter and thinnest American coin. In the U.S., it is the only coin where the value is not marked.

The name of the coin is derived from *disme*, old French for "tenth part", based on the practice of tithing, or donating one tenth of value to a church or charity. A 10-cent piece has been part of American coinage since 1792.

The Drifters memorialized the dime in their 1963 recording "On Broadway": "...but how you gonna make some time when all you got is one thin dime, and one thin dime won't even shine your shoes (on Broadway)."

Before 1965, dimes were composed of 90 percent silver. Post-65 coins are copper-nickel alloy. The older coins are commonly traded by weight as silver bullion.

Since 1946, the coin has featured an obverse side view of President Franklin Roosevelt facing left, and a reverse with a torch surrounded by olive and oak branches.

Original stories by Dave Felice, with material from multiple sources. The author is a member of the National Writers Union.

https://americansongwriter.com/the-meaning-behind-operator-thats-not-the-way-it-feels-by-jim-croce-and-how-a-stint-in-the-national-guard-sparked-the-idea/
https://www.songfacts.com/facts/jim-croce/operator-thats-not-the-way-it-feels

TELECOMMUNICATIONS HISTORY GROUP