

## **INTRODUCTION**

From 1956 to 1959 Mohawk Business Machines Corp. released four versions of its portable tape recorder, the Mohawk Midgetape. The earliest model of the Midgetape was the BR-1, subsequently and sometimes simultaneously the Midgetape 44, which recorded audio to tape and featured a vacuum tube powered amplifier. The three subsequent models (the 300, 400, and 500 Professional) are all very similar to each other, but with one variation on the 44: a removable transistor amplifier. The Mohawk Midgetape is notable for being among the earliest portable tape recorders, although exactly how much of a pioneer it was is somewhat unclear. Primarily marketed for professional purposes, the Midgetape was used for professional dictation, interviews, and fieldwork.

## **BACKGROUND**

In *Off the Record: the Technology and Culture of Sound Recording in America*, David Morton claims that prior to the tape recorder dictation equipment was struggling to compete with the typewriter in the office space.<sup>1</sup> The typewriter was seen as essential to the workplace, with handwritten letters no longer being considered professional. Dictation systems were marketed as being more efficient, but many faced technological issues that complicated this push. Wax cylinder recording was difficult and unreliable without a

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<sup>1</sup> David Morton, *Off the Record: the Technology and Culture of Sound Recording in America* (New Brunswick and London: Rutgers University Press, 2000), 86.

practiced, expert hand. Even as listening technology improved, leading into headphones, electronic amplifiers, and improved microphones, the recordings themselves were often unintelligible.<sup>2</sup>

Beyond adding additional work deciphering these recordings, secretaries and typists also saw dictation technology as a threat to their livelihood. As it turns out, they had little to fear, because management was inclined to distrust this technology, not only taking the training into account. “Businessmen who tried the equipment and rejected it reported that they felt awkward or silly talking to a machine, or that when they checked their recordings, they found that they intensely disliked the sound of their own voices coming from the cylinders. Manufacturers, borrowing terminology from radio, called this phenomenon microphone fright.”<sup>3</sup> Despite years of extensive marketing, Dictaphone estimated in 1945 that “only about 15 to 25 percent of the potential market for dictation equipment had been won.”<sup>4</sup> The large number of competing choices coupled with a lack of standardization was another likely factor in deterring potential customers.

The dictation market that the Mohawk Midgetape emerged in was a very competitive one, with a trend towards smaller and lighter audio recording devices. “A distinct sub-class of portable dictating machines was the ultra-compact, pocket-sized model. These were introduced in the 1950s, perhaps the first being the Protona Minifon (1952), a general purpose wire recorder also used for surveillance.”<sup>5</sup> As a portable, battery-powered, magnetic tape recorder with a transistor amplifier, the Midgetape may have been

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<sup>2</sup> David Morton, *Off the Record: the Technology and Culture of Sound Recording in America* (New Brunswick and London: Rutgers University Press, 2000), 87-88.

<sup>3</sup> *Ibid.*, 87

<sup>4</sup> *Ibid.*, 86

<sup>5</sup> Bryan Dewalt, “Men, Women and Machines: Time Management and Machine Dictation in the Modern Office,” *Material Culture Review* 52, (Fall 2000): 25.

the first commercial product to combine a number of emerging technological trends, but this may have still been insufficient to distinguish it in the marketplace. Dictaphone's Dictet, a "fully transistorized unit weighed about 1.2 kg and used a special cassette holding enough tape for sixty minutes of recording time" released in 1956, may have also beaten Mohawk to the punch.<sup>6</sup> Comparisons in quality aside, these devices suffered from lack of compatibility with "standard desktop transcription equipment."<sup>7</sup> Nonetheless, the Midgetape received positive reviews upon its release, not only in an audio technology magazine but also by a scholarly journal serving professional anthropologists and ethnographers, suggesting that it was not simply another version of similar devices.<sup>8</sup>

### **MOHAWK MIDGETAPE**

The following technical information and specifications pertain to both the Mohawk Midgetape 300 and 400 models, copyrighted in 1960. Per the manual's first page of general information:

The Mohawk Midgetape Models 300 and 400 are battery operated, all transistor, portable tape recorders. The units operate at 1 7/8 ips tape speed and are designed for voice recordings. Recording is dual track on tape supplied in special cartridge. The Midgetape features push-button microphone for remote control stop and start and will playback through the microphone, optional earphones or internal speaker. Recordings can be monitored if desired. The recording time using both tracks is 1 or 1 1/2 hours depending on the type tape (sic) used.<sup>9</sup>

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<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> The reviews in question are from *High Fidelity* and *American Anthropologist*, both discussed later in this paper.

<sup>9</sup> "Mohawk Models 300, 400," (Indianapolis: Howard W. Sams & Co., Inc., 1960) 1.

The Midgetape is 8 1/2 inches long, 3 7/8 inches wide, 1 7/8 inches in height, and weighs less than three pounds. A simple design meant for professional use, the Midgetape has three main controls: one-off, play-record, and volume. An incandescent lamp acts as a battery life indicator.

The Midgetape used cartridges of 1/4" wide magnetic tape with a Dupont Mylar (polyester) base. Although the tape cartridge appears to be non-standardized, the tape itself could be removed from the cartridge (at least for the 300 and 500 models).<sup>10</sup> Tapes were rewound by hand with a built in crank on the chassis. Battery life was between 45 and 100 hours, making it very useful for fieldwork.<sup>11</sup>

### **USE AND USERS**

Perhaps as a response to the difficulty of using earlier dictation technologies, the Midgetape seems designed to make untrained use as easy as possible. The manual's operating instructions gives user-friendly steps on how to operate, with options allowing for more or less control (depending on the desires of the user). For example, the microphone can be plugged in two ways: "The microphone plug has the letter "D" imprinted on one side; the other side is blank. When the plug is inserted into the microphone jack with the "D" side up, the recording volume is fixed (cannot be varied with the Volume control) for dictation. Good recordings can be made with the microphone from the speaker's mouth. When the microphone plug is inserted with the blank side up, the

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<sup>10</sup> John T. Hitchcock and Patricia J. Hitchcock, "Some Considerations for the Prospective Ethnographic Cinematographer," *American Anthropologist* 62, no. 4 (1960): 667.

<sup>11</sup> "Mohawk Models 300, 400," (Indianapolis: Howard W. Sams & Co., Inc., 1960).

Volume control will vary the level of signal to be recorded.”<sup>12</sup> The fixed recording volume would be useful for a novice user, but someone with a need to adjust recording volume (to record something at a distance, for example) is able to.

A review in *High Fidelity* magazine of the first model, the Midgetape 44, corroborates the usefulness of the device in the business and professional world, although it points to the lack of hi-fi sound as potentially limiting its audience outside of this market and beyond casual or novelty use. Still, the review is highly positive, suggesting, “If you can appreciate the beautiful precision of a fine watch, or a faithful reproduction in miniature of a sailing ship, the Midgetape will fascinate you. This battery-operated recorder will fit inconspicuously in a topcoat pocket and you can make perfectly good recordings, with the microphone nowhere in sight, anywhere you can ride or walk.”<sup>13</sup> The examples of use in the review suggest that the device has usefulness outside of mere dictation, from recording in secret (surprising guests with surreptitious recordings of their conversations) to capturing difficult to produce sounds or evidence (a parakeet talking or a peculiar car noise).<sup>14</sup> Their inclusion in this review suggests that there is not much (if any) competition on the market that can achieve the same effect. Furthermore, beyond novelty, it is clear that these could be useful in professional fields outside of the office setting.

Although the full scope of its use is unclear, especially in regards to general office and business use, the Midgetape was used in a variety of fieldwork. In 1959, it was used in a study on bird behavior, where it was “very useful for recording the more rapid

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<sup>12</sup> “Mohawk Models 300, 400,” (Indianapolis: Howard W. Sams & Co., Inc., 1960) 3.

<sup>13</sup> “Tested in the Home: Mohawk Midgetape,” *High Fidelity*, (August 1955): 78.

<sup>14</sup> *Ibid.*

interactions.”<sup>15</sup> A 1960 article in *American Anthropologist*, titled “Some Considerations for the Prospective Ethnographic Cinematographer” listed it as a viable option for ethnographic fieldwork.

An excellent super-portable, one-speed (7 1/2”/sec.) recorder the size of a brick, that gives remarkable results when recording music, is the 3 pound Mohawk Model 500 Midgetape (\$360). There is also a less expensive, one speed (3 3/4”/sec.) Mohawk Model 300 Midgetape which has been used most successfully for recording voice in the field. If the 500 model is used for voice as well as music it must be remembered that it uses up to two times as much tape as necessary for obtaining good voice recordings. This disadvantage must be weighed against its outstanding performance and its portability.<sup>16</sup>

Although the article suggests that another device, the Fi-Corder, is more portable and affordable (depending on the model, the Midgetape sold from between \$250 and \$360), it is still considered a very high quality tool for ethnographic filmmaking. It should be noted that although the High Fidelity review of the 44 model decries the lack of high fidelity, the *American Anthropologist* article includes the 500 and 300 models precisely because they are hi-fi. Even for professional use, the quality of the device is both “excellent” and “outstanding.”<sup>17</sup> If advertisements are to be believed, the “broadcast quality” Midgetape 500 (referred to here as the Mohawk Midgetape Professional 500 High Speed Pocket Tape Recorder) was “used by NBC – CBS and numerous radio and TV stations, for recording in the field.”<sup>18</sup> A newspaper article on the appointment of a new director states, “Mohawk

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<sup>15</sup> Millicent S. Ficken, “Agonistic Behavior and Territory in the American Redstart,” *The Auk* 79, no. 4 (October 1962): 608.

<sup>16</sup> John T. Hitchcock and Patricia J. Hitchcock, “Some Considerations for the Prospective Ethnographic Cinematographer,” *American Anthropologist* 62, no. 4 (1960): 667.

<sup>17</sup> *Ibid.*

<sup>18</sup> Mohawk Business Machines, Advertisement, June 27, 1960. Page 82.

manufactures Midgetape battery operated pocket size tape recorders and other magnetic tape devices for industry and government.”<sup>19</sup>

### **MOHAWK BUSINESS MACHINES CORP.**

The history of Mohawk Business Machines Corp., a company registered in Maryland but based in Brooklyn, NY, is difficult to state authoritatively, but bits of information can be pieced together to give a rough idea of what happened to the company in the late 50's and early 60's. Names of company members have been gathered from a variety of sources. Company president George F. Ryan was easily the most visible, with his visage gracing several Mohawk advertisements. Others such as Kalju Meri, Ralph West, Joseph A. Balvin, and Wolfgang Fredrick Heine are listed on patents filed on behalf of Mohawk, although their exact roles in the company are unclear. Addison R. Taylor, who passed away in 1998, was secretary and director.<sup>20</sup> Kalju Meri, registered patents on behalf of several companies, from Mohawk Business Machines in 1957 to the Dictaphone Corporation in 1976, well after Mohawk's dissolution.<sup>21</sup> <sup>22</sup> One suspects that Meri in particular has not been given proper credit for his work in the field; despite being referred to as a “pioneer in electronics” in notes about his collection of Estonian-American cultural materials at the University of Minnesota, there is very little information about his work in the field of audio recording.<sup>23</sup>

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<sup>19</sup> *Putnam County Courier*, Vol. 115 No. 38 (Carmel, NY). July 17, 1957.

<sup>20</sup> “Addison R. Taylor '44,” *Princeton Alumni Weekly*, October 7, 1998, <https://paw.princeton.edu/memorials/46/25/index.xml>.

<sup>21</sup> Kalju Meri and Ralph West, “United States Patent: 2810791A - Record-playback system for magnetic recording,” Oct 22, 1957.

<sup>22</sup> Kalju Meri, “United States Patent: 4079200A - Apparatus for recording replies to pre-recorded messages,” March 14, 1978.

<sup>23</sup> “Meri, Kalju, Papers.” Immigration History Research Center, College of Liberal Arts, University of Minnesota. Accessed November 5, 2014.

At the very least, there is likely an interesting story behind the brief run of Mohawk Business Machines.

Around the same time as the Midgetape's release, Mohawk faced a handful of lawsuits. It is my contention that this is connected to the demise of the company (whether a cause or a symptom is unclear). In September 23, 1958, Mohawk Business Machines defended itself in the New York Supreme Court against allegations that it attempted to bar shareholders from having a voice in a shareholders meeting. The plaintiffs, Gordon Holdings, Ltd. et al., claimed that Mohawk had allegedly refused to transfer rightfully owned shares (137,819 shares in question), and filed for a temporary injunction against the upcoming shareholders meeting.

Plaintiffs claim to be the actual owners of, and they actually hold proxies from the record owners of, 137,819 shares in a Maryland corporation. The corporation refuses to transfer the shares on its books, and therefore plaintiffs seek to enjoin a called meeting of stockholders. Plaintiffs are denied a temporary injunction, for three reasons: (1) this is an internal affair of a Maryland corporation; (2) the Code of Maryland (art. 23, § 44, subd. [d]) provides that, "Unless otherwise agreed in writing, the record holder of any shares with actually belong to another, upon demand therefor, shall issue to such actual owner a proxy to vote such shares"; and (3) under such statute, such proxies are irrevocable and may be voted by plaintiffs at the stockholders' meeting.<sup>24</sup>

Although this temporary injunction was denied, the court held that the plaintiff shareholders were able to vote at the meeting with proxies. The injunction was denied as it was unnecessary.

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<http://www.ihrc.umn.edu/research/vitrage/all/em/EAU/pers/m/ihrc3105.html>

<sup>24</sup> Gordon Holdings, Ltd. v. Mohawk Bus. Machines Corp., 13 Misc. 2d 1024, 179 N.Y.S.2d 33 (Sup. Ct. 1958)



This was followed in October 17, 1958 by a motion to reargue or resettle the previous order, again by Gordon Holdings, Ltd. By this time the shareholders meeting had already taken place, but the plaintiffs argued that they had not been given sufficient warning. The court denied this motion, stating that enough time had been given; however, the court did not rule on the plaintiffs' additional accusation of fraud on the part of Mohawk Business Machines. Plaintiffs were "granted leave to serve a supplemental complaint alleging fraud and deceit by the individual defendants in the solicitation and procurement of proxies, and seeking judgment setting aside defendants' proxies."<sup>25</sup> This does nothing to prove that Mohawk Business Machines was guilty of fraud in any way, but rather indicates that this sort of complaint would be decided elsewhere. Only three years later, the company would change its name to Mohawk Electronics Corp., only to file bankruptcy in 1965.<sup>26</sup>

## **PRESERVATION**

Considering its brief time on the market, the Mohawk Midgetape has proven to be sturdy. As of this writing several demonstration videos can be found on YouTube, although most date back to 2008. Additionally, although I was not able to obtain a Midgetape over the course of writing this paper, they have not disappeared completely; occasional copies resurface for sale, for anywhere from \$40 to \$150. This seems to suggest that a large number of Midgetapes were produced during its short run. Instances of (somewhat) recent

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<sup>25</sup> Gordon Holdings, Ltd. et al., Plaintiffs, v. Mohawk Bus. Machines Corp. et al., Defendants, 13 Misc. 2d 1044 (N.Y. Sup. Ct. 1958).

<sup>26</sup> Andrew Leckey, "Successful Investing," Observer-Reporter, (Greene and Washington counties, PA), June 14, 1992.

repair can be found, where broken or malfunctioning Midgetapes were brought back to working order. Part of this is due to the fact that other companies manufactured many of the components.<sup>27</sup> Outside of the tape cartridges, there seems to be very little that cannot be replaced, although this will likely become more and more difficult as time passes. Keeping the Mohawk Midgetape in working condition should not be considered a priority; the importance of the format is more in its early unveiling as a portable tape recorder.

It is more fruitful, therefore, to focus archival efforts on researching the Mohawk Midgetape's place in the history of tape and audio recording technology. This is, of course, easier said than done. The sturdiness and reliability of the technology may indicate why the format has not vanished, but there is only a very small amount of information that can be obtained about the manufacturer. The span of time between Mohawk Business Industries unveiling several models of the Midgetape, facing a handful of lawsuits, changing its name, and filing bankruptcy was very short. This tumultuous history is perhaps the reason why so little information exists publicly. Considering the time period in which the Midgetape was produced, it may prove difficult to find any people involved in this format's creation that are still alive. I request that anyone with first or secondhand information about the history of the Midgetape and/or Mohawk Business Machines contact me through NYU.

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<sup>27</sup> The manual for Midgetape models 300 and 400 contains a parts list with replacement information, including company names and part numbers.

## Annotated Bibliography

"Addison R. Taylor '44." *Princeton Alumni Weekly*. October 7, 1998.  
<https://paw.princeton.edu/memorials/46/25/index.xml>.

The obituary of Mr. Taylor gave information on his position in the company, and offers potential avenues for additional research into the company should this research be extended.

Dewalt, Bryan. "Men, Women and Machines: Time Management and Machine Dictation in the Modern Office." *Material Culture Review* 52, (Fall 2000): 16-32.

This source cast doubt on the importance of the Mohawk Midgetape. The language in this article casts the Midgetape as one of many similar technologies of the time, and doomed to fail due to its high cost and incompatibility with other office and business technology and equipment. This is especially striking in contrast to Mohawk's advertisements, which position it as a groundbreaking device (not surprisingly, given that they are ads).

Ficken, Millicent S. "Agonistic Behavior and Territory in the American Redstart." *The Auk* 79, no. 4 (October 1962): 607-632.

This article mentioned a specific use of the Midgetape in fieldwork, and a notice that it was a useful for capturing rapid interplay between birds. The rest of the article was not pertinent to this paper.

Hitchcock, John T. and Patricia J. Hitchcock. "Some considerations for the prospective ethnographic cinematographer." *American Anthropologist* 62, no. 4 (1960): 656-674.

This source was incredibly useful, as it was an analysis of the effectiveness of two Midgetape models (the 300 and 500) in a professional field. It compared sound quality between the two models, and deemed both suitable for ethnographic work. There is one possible mistake: it mentions that the 500 records at a tape speed of 7 1/2" per second, but all of my other sources list it as recording at 3 3/4" per second.

Leckey, Andrew. "Successful Investing." *Observer-Reporter*. (Greene and Washington counties, PA), June 14, 1992.

This newspaper column confirmed, as much as possible, that Mohawk Business Machines changed its name and went bankrupt shortly afterwards. A source for this information is listed but is unfortunately not easy to follow up on.

"Meri, Kalju, Papers." Immigration History Research Center, College of Liberal Arts, University of Minnesota. Accessed November 5, 2014.

<http://www.ihrc.umn.edu/research/vitrage/all/em/EAU/pers/m/ihrc3105.html>

The use of this website is primarily to suggest that Kalju Meri is worth more attention in terms of research, although this may prove challenging. The content of this collection does not seem to pertain to his work for the Mohawk Business Machines, although it may be helpful to peruse his papers at some point.

Meri, Kalju. "United States Patent: 4079200A - Apparatus for recording replies to pre-recorded messages," March 14, 1978.

Meri, Kalju and Ralph West. "United States Patent: 2810791A - Record-playback system for magnetic recording," Oct 22, 1957.

Both patents discuss interesting aspects of audio recording technology, however with my limited knowledge of the subject they were primarily useful in terms of situating the career of Kalju Meri, in his path after Mohawk Business Machines.

Morton, David. *Off the Record: the Technology and Culture of Sound Recording in America*. New Brunswick and London: Rutgers University Press, 2000.

This book was fundamental in situating the emergence of the Mohawk Midgetape. The book is perhaps more focused on the cultural history than the technological, which was well suited for my purposes. I would have liked stronger documentation of sources, because while I found many of the statements to be truthful I felt that other less intuitive information would have benefited from citing the author's research.

"Mohawk Models 300, 400." Indianapolis: Howard W. Sams & Co., Inc., 1960.

The manual for Midgetape models 300 and 400 gave specs and technical information that was vital for this paper, although it was difficult to tell what information applied to the 44 and 500 models. General consensus throughout the research was that there was very little between models, so it seems safe to assume that information discusses in this manual applies (at least somewhat) to the other models as well, and therefore to the general device that is the "Midgetape."

*Putnam County Courier*, Vol. 115 No. 38 (Carmel, NY). July 17, 1957.

This source was mostly inconsequential except for the appointment of a new director. The key information here is that Mohawk Business Machines is identified as manufacturing products for government use.

"Tested in the Home: Mohawk Midgetape." *High Fidelity*, (August 1955): 78.

Since the review is of the first model (the Midgetape 44) that used tubes, it is somewhat limited in its usefulness for this paper. Nonetheless, the discussion about practical use likely applied to the transistor models as well. Valuable information

from the review includes the identified market (business, professional, and casual), and most importantly it discusses the quality of the model at the time of its release.

### **Legal Cases Referenced**

Gordon Holdings, Ltd. v. Mohawk Bus. Machines Corp., 13 Misc. 2d 1024, 179 N.Y.S.2d 33 (Sup. Ct. 1958)

Gordon Holdings, Ltd. et al., Plaintiffs, v. Mohawk Bus. Machines Corp. et al., Defendants, 13 Misc. 2d 1044 (N.Y. Sup. Ct. 1958)

Mohawk Bus. Machines Corp. v. United States, 46 Cust. Ct. 693 (Cust. Ct. 1961)

Techno-Lectric Indus., Inc. v. Mohawk Electronics Corp., 35 Misc. 2d 45, 229 N.Y.S.2d 1019 (Sup. Ct. 1962)

Not all of these cases had a negative outcome for Mohawk Business Machines, but their trajectory leading up to accusations of fraud, a company name change, and bankruptcy (all in quick succession) is relevant to a discussion on the Midgetape device, particularly with the question of why it disappeared from the market despite being generally well received. With the assistance of someone versed in legal research it is likely that more information could be ascertained.