Aparna Subramanian

CINE GT 2920 - Moving Image and Sound: Basic Issues and Training

Professor Ann Harris

Date: 6th December 2019

VitaScan: Pioneering Color Television Camera

The television industry, from its inception, has seen significant growth in technology, transitions, and form as well as equipment.

John Logie Baird, a Scottish engineer, built one of the early prototypes for video systems and was one of the inventors of mechanical television**.** Baird's company, Baird Television Development Company, was the first to broadcast a transatlantic television signal between London and New York. Baird demonstrated the first color television ever to be devised, marking a series of changes in the way the industry worked. He brought about this analysis and synthesis of the idea of color television, initially in 1932, with a 30 line mechanically coded scanning system. Television, which came in 1927, started to seem like an industry where significant progress would follow. In 1937, British Broadcasting Company (BBC) London was programmed by Baird using a 240-line live mechanical pickup using a flying scanner method, which became standard.[1]As Baird took his mechanical scanning system from 30 to 240 lines, it still had shortcomings leading to failures in these mechanical systems. The mechanical system caused acute issues every time it was in use, and the sensitivity required for photocells available during the given period was not as much.

[1]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

1944[2]was a year that marked a paradigmatic shift for the television industry on the technology and equipment front, as well as changed the way people saw motion pictures in those times.A shift to non-mechanical cathode ray tubes was made only in 1947, about a decade after the first use of a mechanical scanning system by Baird. The usage of a non-mechanical scanning system in the first False Color Composite hearing connected to a Radio Corporation of America (RCA) color TV system. The 18" x 24" scanned area restricted pick up of images to quite a bit, cutting the actual scene off to a great extent. This non-mechanical scanning system deployed photomultiplier tubes that caught onto weaker light signals for better imaging.[3]However, the light collection was restricted by the limitations of the scanning area, even after the usage of a 931A photomultiplier tube, which is a 9-stage side window type tube, explicitly used in low-light areas to catch weaker light signals.[4]

As the industry saw changes taking place slowly to shoot from monochrome to color, a change in the shooting equipment became a must. The process to develop VitaScan, a color television camera, started in 1949, took over a decade after Baird first displayed his invention to the world. Although the process to develop VitaScan begun in 1949, it was only released on an experimental basis in 1956. In 1949, when the work on VitaScan started, DuMont had the advantage of newly available photomultiplier tubes to use in its system. However, it wasn't until 1954 that components and other elements of equipment fit together well enough. The progression/ advancement of available technology was optimized enough to provide significant advantage to the television industry as well as overcome the problems faced by previous systems

[2]"Vitascan." Wikipedia. Wikimedia Foundation. Accessed October 30, 2016.
https://en.wikipedia.org/wiki/Vitascan

[3]Ibid

[4]Ibid

and cameras. Availability of 5" multiplier tubes in the commercial market, proved to be extremely helpful for VitaScan to become a reality.[5]

Made by DuMont, VitaScan was developed as a system that could process NTSC color and raw format of shooting. The company hoped that the camera with its technology and functions would fit into the industry.[6]

The initial plan was to demonstrate the live color pickup functionality of VitaScan in over 7 foot of scanned area for research purposes. However, after some research, consulting and analysis, it was apparent that VitaScan could be put to use in normal broadcasting and color television. A prototype version was demonstrated in a conference, to explain its usage in 1955.

In simple terms, VitaScan works in the reverse of a conventional television camera when it comes to capturing footage[7]. VitaScan was intended to give high-quality live color images for television, and presumably a replacement to expensive color television cameras. It worked on the flying spot scanner principle, that was already deployed by DuMont earlier for scanning color slides and films. [8][9]

For VitaScan, a high intensity, high voltage light beam was directed from the flying spot scanning tube, towards the subject or scene in focus. This beam would be sharp enough to be

[5]Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[6]DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. Accessed September 28, 2019. http://lampes-et-tubes.info/sp/sp186.php?l=e

[7]DuMontVitascan. Accessed September 30, 2019. http://www.earlytelevision.org/dumont_vitascan.html

[8]Ibid

[9]"Eyes Of A Generation...Television's Living History." In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos. Accessed September 30, 2019. https://eyesofageneration.com/the-dumont-vitascan-system/.

reflected by a variety of objects and things in the scene. The amount of color that got reflected also differed from scene to scene. In this mechanism, there was a noticeable difference in the light that was initially released using the flying spot scanning tube onto the scene, and the color and light that got reflected with different variations in it. VitaScan was a camera, equipped with 4 photomultiplier tubes to pick up this reflected light and process it into the active or live colored image pickup.[10]These phototubes included dichroic color filters, 2 tubes with Red, 1 with Green, and 1 with Blue, to procure the colored image. The variations in light, color, and intensity were picked up by the photocells in these photomultiplier tubes that VitaScan had and converted light energy into currents efficiently for producing the necessary images.[11]VitaScan worked in perfect sync through the process above, starting from sending light beams to processing variations in reflected light and converting to RGB and then currents.

Along with this traditional DuMont multi scanner package, there was a requirement of several other things to facilitate live pickup of images. VitaScan, according to the original DuMont package, could either be one or a set of two cameras working together. These "cameras" were essentially flying spot scanners, which would emit high-intensity beams to be caught by photomultiplier tubes.[12]VitaScan had the freedom to be mobile or fixed according to the preference or need of the studio or setting that shooting would be taking place. A favored arrangement for VitaScan was one demonstrated at the 1955 National Association of Radio and

[10]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[11]“Eyes Of A Generation...Television's Living History.” In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos. Accessed September 30, 2019. https://eyesofageneration.com/the-dumont-vitascan-system/

[12]DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. Accessed September 28, 2019. http://lampes-et-tubes.info/sp/sp186.php?l=e

Television Broadcasters (NARTB) convention using one mobile and one fixed scanner, to replicate the resemblance of a traditional camera.[13]

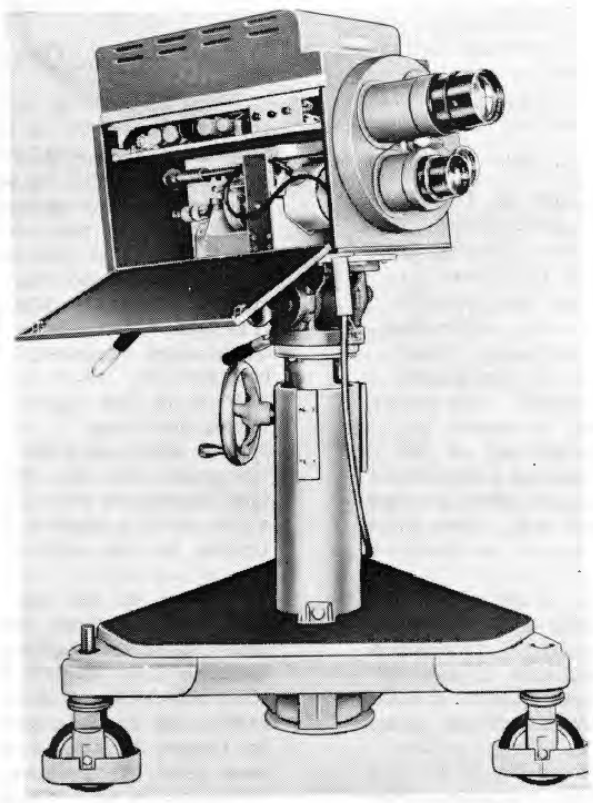

Fig. 4 - Mobile Vitascan "camera."

[14]

[13]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[14]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

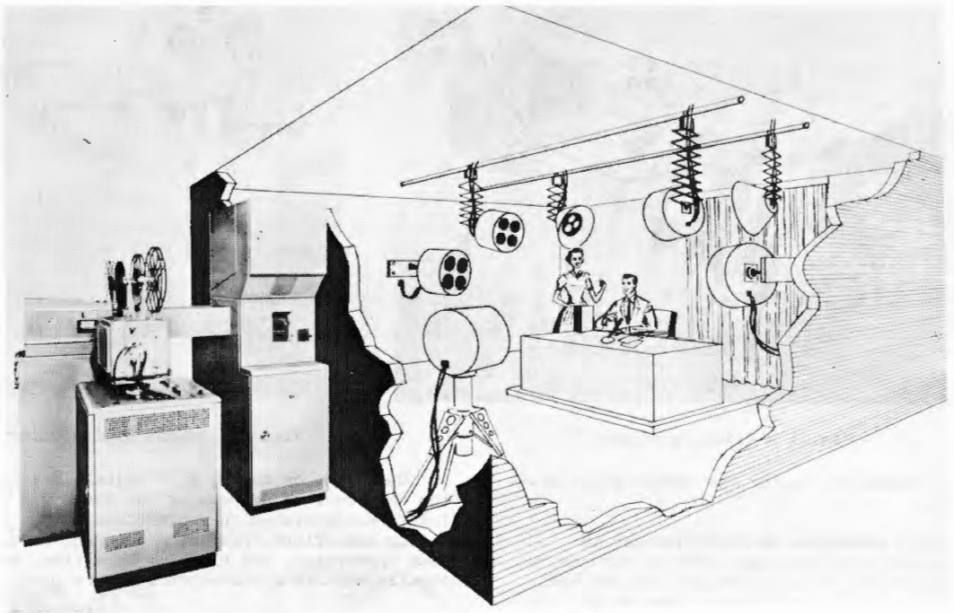

Fig. 3 - Multiscanner used as fixed Vitascan.

The fixed scanner is easily adaptable to different styles of work, and the cabinet was removable to facilitate quick pickup of images. The mobile scanner, on the other hand, resembled the traditional television cameras, with an advantage of portability.[16]As it was a light-emitting source, the adjustable focal length was an added benefit. These focal lengths could be adjusted to take a variety of shots, from close-up to long ones. The phototube clusters were 5" tubes of DuMont 6364 variant, which gave VitaScan a specific advantage. From its initial development back in 1949, it took time for usage of this variant in the scanner-camera system.[17]

As stated before, VitaScan worked in the reverse of a conventional television camera.[18]In a VitaScan shooting environment, the light produced by the scanning tube and its lens was

[15]Ibid

[16]"Eyes Of A Generation...Television's Living History." In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos. Accessed September 30, 2019. https://eyesofageneration.com/the-dumont-vitascan-system/

[17]Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[18]DuMontVitascan. Accessed September 30, 2019. http://www.earlytelevision.org/dumont_vitascan.html.

projected onto the subject and scanned at the same time. Some light that got dispersed in different variations was collected and processed by clusters of photocells and photomultiplier tubes placed at different points in a studio setting.[19]

In a traditional setting, light from a studio fixture or strobe lighting gets projected onto the subject or scene, and the reflected light is caught by a light-sensitive electrode to be processed and intercepted into signals.

VitaScan worked with a different method. It used a stroboscopic lighting process that allowed scanning at the same time. The first version had stroboscopic xenon flash lamps that went off periodically during the scanning intervals[20]. However, to improve on it, the following version featured miniature cathode-ray tubes (CRTs), that operated at 15 kV for the same interval as before.[21]

Even though VitaScan operated in reverse compared to the traditional technique for shooting, it had its advantages as a live program camera. The usage of DuMont's D6364 variant of scanning phototube clusters was a considerable advantage to VitaScan even though it delayed its commercial and widespread deployment by a few years. There were different viable ways of generating a color preview picture using VitaScan technology. The technology was to be assessed by the criteria of the economic advantage of the device, quality of picture generated, registration of color, processing and transferring signals, and complexity of the operation. Color

[19]DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. Accessed September 28, 2019. http://lampes-et-tubes.info/sp/sp186.php?l=e

[20]DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. Accessed September 28, 2019. http://lampes-et-tubes.info/sp/sp186.php?l=e.

[21]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

registration was hassle-free with the camera, given the scanning operations had already taken place before the light was initially released. Since VitaScan worked on the principle of picking up reflected light, it's usage was restricted to indoors. However, as very little light was required near the pickup tubes or photomultipliers, the amount of usage of heavy lighting equipment in the studios reduced, which was beneficial to production cost and space used in the set.[22]

In the NARTB conference of 1955, VitaScan showed great potential as a research tool. It provided exceptional color television signals that were interpreted and processed in terms of color rendition, registry, and processing. The lack of color misregistration proved as an immense advantage of VitaScan over other cameras or technological devices for television of that point in time.[23]

As much as the equipment and mechanical functioning of VitaScan appeared complex, operating it was straightforward. It was recommended by many due to its ease of operation, compared to other cameras of the same period. VitaScan could process indoor light and imaging with ease. Therefore, its usage was predominantly for shows based indoors, without the need for many scene variations, and often for news shows.

VitaScan was regarded as one of the most reliable and affordable camera setups available at said point of time. Although there seemed to be many components, there were fewer than the standard components needed for a professional set up. Also, the components used for the building and functioning of VitaScan and ones that went in the set up required for VitaScan, were inexpensive.The specific advantages of VitaScan only became evident when compared to

[22]DuMontVitascan. Accessed September 30, 2019. http://www.earlytelevision.org/dumont_vitascan.html.

[23]"New Products and Developments." Accessed October 19, 2019. Journal of the SMPTE 64 (November 1955): 648

the available technology at that point. Cameras or Scanner setups for color image production and collection of this period required a minimum of 100-kilowatt lighting per square foot, which created much heat and also caused a lot of energy loss, and turned into an additional high cost that the studio or production house had to bear. On the other hand, VitaScan operated well in an indoor setting, with excellent reproduction of color and processing of live images.[24]There were no burns in the images collected by VitaScan. Besides, VitaScan used fairly common pickup tubes compared to other cameras, and thus images came out quite accurately.[25]Therefore, it is fair to say that VitaScan was economically advantageous compared to the other available technology during this period.[26]

VitaScan would take minutes to start up, thus saving the operation people much hassle.[27] An orthicon color camera took hours to set up, which implied that people who operated it would have to be present on the set in advance compared to others. Even to shut a regular camera, it would take a while, which meant that people on the operating side had to be on set before the rest and leave after everyone else.

One of the notable drawbacks for VitaScan happened to be that its usage was limited to indoor. Multiple cameras and usage for live television programs were not feasible for DuMont'sVitaScan, given the lack of previewing facilities needed to view the images recorded.

---

[24]Ibid

[25]"Eyes Of A Generation...Television's Living History." In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos. Accessed September 30, 2019. https://eyesofageneration.com/the-dumont-vitascan-system/

[26]Ibid

[27]Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

For the flying spot system that was adopted by DuMont for VitaScan, any excess external light that would reach the photomultipliers would disrupt the images formed. It would result in "noisy" or "grainy" images due to colors not being processed well enough. A mobile camera set up was still possible to use in indoor studios, where the movement was minimal.

Studios during this period also telecast plays and soaps, which required more panning than what a mobile camera set up could do. For shows that required more variety of shots than just close-ups and long shots, there was a need for the setup of multiple scanners, in the case of VitaScan technology. Though this would be an additional expense, it somewhere came up to the same costs as that of a traditional orthicon camera for color television image pickup. Thus, its usage was primarily for showroom news programs shot in a closed indoor studio, with no shifts needed from the camera's point.

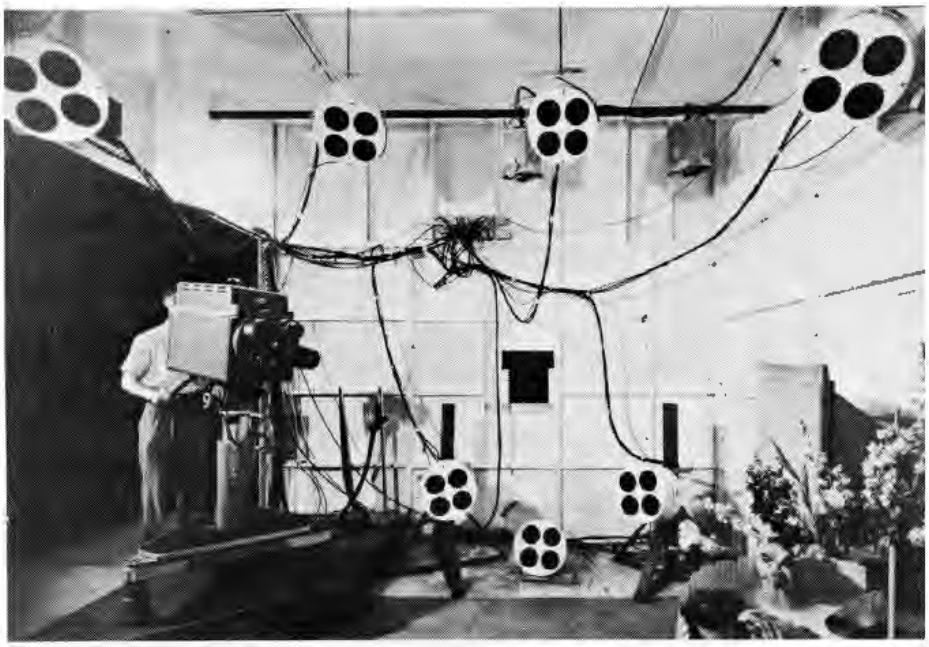

Fig. 1 - Vitascan studio.

VitaScan stood no chance to be used outdoors as the sunlight was a principal barrier in shooting live programs with this camera. Moreover, the ideal setting for VitaScan involved many installations in a studio where it would work well, to avoid excess light.[29][30]Less light remained sought for when shooting with this camera, even after using a strobe light. This absolute want caused the downfall of this camera. Even with a mobile set up, more equipment was required to facilitate shooting a variety of shots for different shows. Consequently, costs would go up extensively for a small studio.[31]At the same time, despite enough devices were procured for the shoot, enough previewing facilities were not available. A small studio often lacked adequate space for so much equipment, let alone the funds. Often shooting happened outdoors. VitaScan's

[28]Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[29]"New Products and Developments." Accessed October 19, 2019. Journal of the SMPTE 64 (November 1955): 648

[30]DuMontVitascan. Accessed September 30, 2019. http://www.earlytelevision.org/dumont_vitascan.html.

[31]DuMontVitascan. Accessed September 30, 2019. http://www.earlytelevision.org/dumont_vitascan.html.

lack of ability to shoot with illumination from the sunlight or other external sources proved to be one of its prominent limitations. [32]

As discussed earlier, VitaScan used Xenon light, a flash lamp for illumination. It had the advantage of lowering the trigger voltage by a few thousand volts but had some notable disadvantages too. Xenon lamps would get ionized, causing flickering. This problem could be fixed by using multiple of them at the same time. There was a significant high current even with a low voltage trigger. Every time there was a surge in current through the lamp, it generated a high amount of noise that was an issue with the lamp used in the early VitaScan variants. Lastly, the life of Xenon flash lamps being 500 hours proved as a disadvantage. This caused a shift from Xenon light to cathode-ray tubes for the succeeding versions of this camera. The newer version generated stable light output, with no flickering, and the outflow of light was noiseless, increasing the lifespan of the product. Nonetheless, there were other disadvantages, albeit minor ones, that were overcome with ease. A high voltage of 15000 volts was required to power the cathode-ray tubes. It was found that the images generated had a slight greenish tint, which could be corrected to white by using the available color filters.[33]

A problem that was later noticed in VitaScan was with the multi scanner usage. In case there were more than one scanners in use, say two scanners, both were focused on the same scene and producing images simultaneously. These were caught on by the clusters of photomultiplier tubes at the same time. Being shot simultaneously and by the same processing tubes, the images generated by the two would get superimposed onto one another in the

[32]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[33]Ibid

previewing monitor.[34]To allow separate processing for imaging done by each camera, separate previewing facilities became a necessity. The problem was to separate the signals without them overlapping at any point, and this became a challenge. Procuring additional instalments and multiplexing system was an available possibility. VitaScan was anticipated to be economical for small studios. In the above scenario, it was failing given the need for extra space-consuming equipment and rising expenses with no assurance of the signals not overlapping..[35]

VitaScan was expected to accomplish the need for a television camera to produce color footage live with ease. It was supposed to be an easy and inexpensive way to produce television programs across the nation. As addressed earlier, the camera was primarily released on an experimental basis. Based on how it would perform, the company was to evaluate its prospects. Between 1956 to 1959, the camera was used by the television studio WITI, in Milwaukee, Wisconsin**,** for their locally produced news programs. However, due to the limitations, including the fact that it could only be used to shoot indoors, the sensitivity to any external light be it outdoors or not, they decided to discontinue its use within a short span of 3 years. VitaScan was so sensitive to external light that the studio could not have any light other than the one where the scene or subject is. This caused inconvenience for actors and people on the backend. These were prime reasons that failed VitaScan. It was inexpensive set up for only one scanning system. Due to its limitations, most of the time, there was a need for additional scanning systems. The studios took the course of investing in traditional color shooting systems instead. The limitations of VitaScan outweighed its advantages and the chances of its sustainability within the television industry.

---

[34]Haines, Jesse H, and G. Richard Tingley. “The VitaScan - Live Flying spot Scanner.” In *The VitaScan - Live Flying spot Scanner*, 1–15. Accessed October 3, 2019. Utah, n.d.

[35]Ibid

VitaScan was primarily designed to be a flying spot scanner that can be used to process images and motion pictures for color television, but it had a lot of limitations/disadvantages. The flying spot scanner technology was the backbone of the working of VitaScan, and the reverse of what was being used at that time. It gave the advantage of there being no errors in the color registry due to analysis of color being done at a later stage but scanning being done beforehand. With the initial models of just one red, green, and blue photomultiplier filter tubes only, there were several issues cropping up, which got resolved with two red photomultiplier tubes allowing for less grainy or noisy images.

The problem observed was the variation in frame rates between television motion pictures and film.[36]The initial flying spot scanner model could shoot at a fairly good rate of up to 24 frames per second. The significant use was for shooting archival footage. DuMont'sVitaScan was one of the pioneers in using flying spot scanner technology as early as the 1950s. Although it did not work due to the limitations, VitaScan allowed for further invention and research to experiment with the use of the flying spot scanner to produce images as per the requirement of the television industry.[37]

Cintel, a British Cinema company, owned by John Logie Baird[38], saw better success than DuMont'sVitaScan. Cintel's flying spot scanner worked as an advanced version of Dumont's VitaScan technology of scanning, with some issues fixed. This technology worked well from

[36]"What's a Flying Spot All about?" GAUTENG FILM COMMISSION, February 2009. Accessed October 20, 2019 http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about.

[37]"Flying spot Scanner." Wikipedia. Wikimedia Foundation. Accessed October 25, 2019.https://en.wikipedia.org/wiki/Flying spot_scanner

[38] "Cintel." Wikipedia. Wikimedia Foundation. Accessed November 24, 2019. https://en.wikipedia.org/wiki/Cintel.

about the 1960s to 1975.[39]However, the differences between field and film rates prevailed to some extent and were solved by the Polygonal Prism series, which then advanced to the Mark 2 Twin Lens and eventually the 'Jump Scan' series in 1975. The Mark 3B series showed a lot of advancement in the television shooting industry by introducing concepts such as digital scanning for output video, etc.

The "Mark" series was replaced in 1989 by the Ursa series, which allowed shooting in a more suitable ratio for the television industry of 4:2:2 and allowing digital data processing. The Ursa Gold showed further changes by upgrading the ratio to 4:4:4 in 1993. Later, the Ursa Diamond included third-party developments in order to make the system more adaptable.[40]

Around 1985, Charged Couple Device or CCDs came into being for shooting.[41]It was also primarily manufactured by Rank's Cintel and Marconi for a short span between 1982 and 1985.[42]In CCDs, white light shines through a prism that splits colors into red, green, and blue, which get sent to a different device each separately for processing the colors to produce an accurate image. They further convert into electrical impulses that can be recorded as a videotape

[39]Ibid

[40]Ibid

[41]"Charge-Coupled Device." Wikipedia. Wikimedia Foundation. Accessed November 24, 2019. https://en.wikipedia.org/wiki/Charge-coupled_device

[42]"What's a Flying Spot All about?" GAUTENG FILM COMMISSION, February 2009. Accessed October 20, 2019 http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about.

if needed. Later, Philips got into advancing the available television devices and worked around CCDs.[43][44]

In 1996, Philips introduced Spirit DataCine, using Kodak parts, in association with them to scan films in High Definition Television (HDTV) resolutions. In 2000, Philips saw further progress with the ShadowCine, a low-cost version of the DataCine from 1996 but with no Kodak parts. CCDs allowed for new illumination and signal processing with no interruptions and outstanding image quality.[45][46]

Although Dumont's VitaScan failed to meet the requirements of the television industry, it lives on as the starting point of innovations to deliver the best experience to the audiences. From the first flying spot scanner that came with Dumont's VitaScan to 50 years later when CCDs developed enough to produce images in HDTV resolution, the television industry had gone through some massive changes. The industry has evolved in its development with equipment and delivery, and reasonably enough, it continues to do so to this day.

Works Cited

[43]"What's a Flying Spot All about?" GAUTENG FILM COMMISSION, February 2009. Accessed October 20, 2019 http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about.

[44]"Charge-Coupled Device." Wikipedia. Wikimedia Foundation. Accessed November 30, 2019.https://en.wikipedia.org/wiki/Charge-coupled_device.

[45]"What's a Flying Spot All about?" GAUTENG FILM COMMISSION, February 2009. Accessed October 20, 2019 http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about.

[46] High-Performance CCD Telecine for HDTV - SMPTE Journals & Magazine. Accessed October 5, 2019. SMPTE, October 1990. https://ieeexplore.ieee.org/document/7229058.

"Charge-Coupled Device." Wikipedia. Wikimedia Foundation. Accessed November 24, 2019. https://en.wikipedia.org/wiki/Charge-coupled_device

"Cintel" Wikipedia. Wikimedia Foundation.Accessed November 30, 2019.https://en.wikipedia.org/wiki/Cintel

DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. Accessed September 28, 2019. http://lampes-et-tubes.info/sp/sp186.php?l=e

DuMontVitascan. Accessed September 30, 2019.http://www.earlytelevision.org/dumont_vitascan.html

"Eyes Of A Generation...Television's Living History. In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos". Accessed September 30, 2019. https://eyesofageneration.com/the-dumont-vitascan-system/

"Flying spot Scanner." Wikipedia. Wikimedia Foundation. Accessed October 25, 2019. https://en.wikipedia.org/wiki/Flying spot_scanner

Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In The VitaScan - Live Flying spot Scanner, 1–15. Accessed October 3, 2019. Utah, n.d.

High-Performance CCD Telecine for HDTV - SMPTE Journals & Magazine. SMPTE, October 1990.Accessed October 5, 2019. https://ieeexplore.ieee.org/document/7229058

"New Products and Developments." Accessed October 19, 2019. Journal of the SMPTE 64 (November 1955): 648

"Vitascan." Wikipedia. Wikimedia Foundation. Accessed October 30, 2019. https://en.wikipedia.org/wiki/Vitascan

"What's a Flying Spot All about?" GAUTENG FILM COMMISSION, February 2009. Accessed October 20, 2019. http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about

Annotated Bibliography

A) "Vitascan." Wikipedia. Wikimedia Foundation.https://en.wikipedia.org/wiki/Vitascan

Wikipedia, being a website for anyone to upload sources and information, the authors remain unknown. They discuss the basics of VitaScan, a color television camera based off of flying spot scanning technology back in the 1950s. The Wikipedia article briefly touches upon the need for the same during those times, given the recent invention of the color television by Baird and how there was a need for new technology to facilitate this color television to work. Some failures and drawbacks of VitaScan are also touched upon, however, insights obtained from the article might seem very brief, and fit for an introduction towards the camera and prevalent technologies.

B) Haines, Jesse H, and G. Richard Tingley. "The VitaScan - Live Flying spot Scanner." In The VitaScan - Live Flying spot Scanner, 1–15. Utah, n.d.

In this paper, VitaScan is explored and explained from different perspectives by the authors Haines, Jesse H and G. Richard. A lot is covered, starting from the basics of when color television and the program of telecasting on it was briefly introduced by Baird in the 1940s, to VitaScanbeing introduced by DuMont in order to cater to smaller studios and allow them to shoot variety of shows in color format, in order to adapt to new changes in television industry.

The drawbacks of VitaScan are shed light upon, and at a lot of its benefits are applauded. The authors make it quite clear that although certain limitations of VitaScanhindered it to be the flourishing technology of the time for color television industry, it paved way for certain upcoming technologies to develop further in the future.

C) DUMONT K1388P24 CRT used as light source in the Vitascan Color TV System. http://lampes-et-tubes.info/sp/sp186.php?l=e

The author of this very brief article, only barely touches on when VitaScan got into production and when it hit the market. This article is just two paragraphs, focuseing on the technical aspects of VitaScan. VitaScan was a flying spot scanner based device, used to capture images in color using photomultiplier tubes and filters of red, green and blue each for processing colors. This has been the core of this brief article, as well as the technical aspects of the photomultiplier tubes, the lamps used as strobe lights, the lenses within the tubes, etc. Certain drawbacks of the camera, directing towards why it failed in the market, have been touched upon, however, major importance has been given to its parts and components as well as functioning.

D) DuMontVitascan. http://www.earlytelevision.org/dumont_vitascan.html

This article gives a brief introduction of VitaScanin the color television industry, when it came into the market, and touches upon the technology and drawbacksvery lightly. The article, contains images that gives the reader an idea of how VitaScan looked like, how it was operated as well as the technical aspects of the same, involving the photomultiplier tubes, lenses, etc. VitaScan was primarily meant for smaller studios, and this article discusses how it works out there too.

E) “Eyes Of A Generation...Television's Living History.” In essence, this is a Television history book with 5000 stories, 10,000 rare photos and hundreds of one of a kind videos. https://eyesofageneration.com/the-dumont-vitascan-system/

A brochure published for VitaScan back in 1956, discusses the flying spot scanner technology used to obtain color images for the television. This brochure serves for marketing purpose for DuMont’sVitaScan than a research document. Nonetheless, a few different aspects of VitaScancome into light due to its marketing value. Technical parts like the measurement and components used for each part like the strobe lights and lamps, material, etc. are listed as part of the brochure. Also, the advantages of VitaScan as well as its selling points are discussed, on how economically viable it was, especially for smaller studio spaces, how it worked very well in color registry are expanded upon.

F) “New Products and Developments.” Journal of the SMPTE 64 (November 1955): 648

The Journal of SMPTE, in its 64th volume, explores new products, advancements and developments and the technologies that go behind the making of the same as a chapter of few pages. A small section is dedicated to VitaScan from DuMont, given its then recent launch. The small section is based onthe very first experiences of the camera, and thus, its limitations haven’t been touched upon in depth. The promises made by DuMont with its economical scanning technology have been mentioned. VitaScan also has been commended for its excellent color registry at the price it is offered at, and how it is affordable for small studios.

G) “What's a Flying Spot All about?” GAUTENG FILM COMMISSION, February 2009. http://www.gautengfilm.org.za/news/news-archive/2009/february-2009/370-whats-a-flying spot-all-about

Flying spot scanner is the technology used for DuMont’sVitaScan in order to produce color images for the television industry. This working of this technology is discussed in some amount of detail in the course of this article. The flying spot scannerworked in reverse of how a traditional scanner worked in order to capture images, by scanning with the photomultiplier tubes in advance, allowing perfect color processing. This technology faced its limitations with VitaScan, but at the same it had paved way for development with these kind of scanners for television industry usage in the future. From the 1950s when it was first introduced to 2000s, when CCDs became more prevalent and image quality changed to HD, a few aspects of evolution of these scanning technologies have been discussed here.

H) “Flying spot Scanner.” Wikipedia. Wikimedia Foundation. https://en.wikipedia.org/wiki/Flying spot_scanner

Wikipedia glances through different aspects of flying spot scanner as a technology used to capture images for the television industry. It mentions how it was used as early as the 1920s in order to produce images. Its first prominent use has to be that of VitaScan by DuMont in the 1950s, a bit after Baird first put out the color television. VitaScan allowed for this technology to process both color and monochrome images and in high-quality raw image settings. Other aspects such as broadcast use, certain limitations and further future have been discussed.

I) “Cintel.” Wikipedia. Wikimedia Foundation. https://en.wikipedia.org/wiki/Cintel

Cintel, a company formed by John Logie Baird, in the 1920s is the prime focus of this article. The purpose of this company, its fate, and different milestones during its lifespan is discussed. Cintel majorly focused on creating post-production equipment for television studios, in order to ensure images get to television in the highest quality possible. Towards the 1980s and 1990s, Cintel saw a progress in improving the flying spot scanner technologies in order to improve image quality that was shown on television broadcast.

J) “Charge-Coupled Device.” Wikipedia. Wikimedia Foundation.

https://en.wikipedia.org/wiki/Charge-coupled_device

As cited by Wikipedia, Charge-Coupled Device, or CCD is a device used to transfer electrical charge to a spot where it can be converted and stored or played with in a digital value format.Till date, CCDs are a major part in the digital imaging industry. From studying this article, it is evident that CCDs even though first appeared as a prospective technology for the television or digital industry back in late 1950s, it only came across as a breakthrough for digital image processing much after the flying spot scanner ventures. As this gets discussed through the article, as well as its current position in the industry, a lot of its evolution since has also been covered.