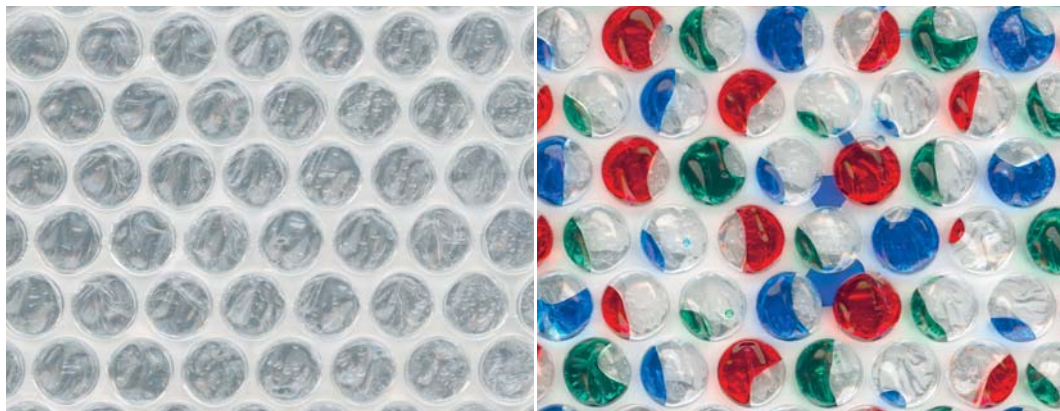


VSSTV—Very Slow Scan Television



Very Slow Scan Television (VSSTV) is a new television format that we have developed building upon *Slow Scan Television (SSTV)*, an almost 50-year-old image transmission system used by Ham Radio amateurs. In contrast to regular TV, SSTV runs on a dramatically reduced frame rate.

Developed in 1957 by Copthorne Macdonald, Slow Scan Television uses the shortwave radio band (Ham Radio) to transmit television images. Ham Radio not only broadcasts information (as is the case with conventional radio), but also uses the radio spectrum for personal communications, usually on a point-to-point basis over a previously negotiated frequency. Unlike to telephone conversations, this communication is open and can be listened to by anyone who happens to be tuned into the same frequency. The Ham Radio band was reserved for the purpose of voice transmission, and therefore uses only a small amount of bandwidth. Broadcasting images within this narrow bandwidth requires reducing their quality and rules out transmitting moving images. Furthermore, the visual information has to be converted into an audio signal.

According to British Ham Radio operator Guy Clark (N4BM),

The original idea was to find a method of transmitting a television picture via a single speech channel. This meant that a typical (at that time) 3MHz wide television picture had to be reduced to around 3kHz (1000:1 reduction). It was decided at the outset that the scanning rates must be very slow, which precludes the use of moving pictures. The choice of time base for synchronizing was the readily available domestic power supply at 50 or 60 Hz (depending on the country of origin). This gave a line speed of 16.6Hz and 120 or 128 lines per frame (against the then UK standard of 405 lines (now 625) per frame), giving a new picture frame every 7.2 or 8 seconds. ... The original SSTV systems were based on ex-government radar screens and cathode ray tubes with very long persistence ("P7") phosphors. This allowed an image to be painted on the screen over a period of a few seconds. The modulation technique often transmits defective images, evident in trapezoid distortions in the image caused by time synchronisation problems.

SSTV may suggest a parallel TV universe, one that developed during an era in which television monopolies were consolidating their hold over mass media culture. But it also shows similarities to current streaming and netcasting technologies where personal flair and taste determine the range of images broadcast.

VSSTV uses broadcasts from the historic public domain television system—available anytime over freely accessible frequencies—and regular bubble wrap to construct an analogous system in which the packing material functions as the aperture mask. Just as a Cathode Ray Tube mixes the three primary colors to create various hues, VSSTV will utilize a plotter-like machine to fill the individual bubbles with one of the three primary CRT colors (red, green, and blue), turning them into pixels on the VSSTV “screen”. Observed from a distance, the clusters of pixels/bubbles will merge into the transmitted image. Large television images will be the result, images that take the idea of slow scan to the extreme. The SSTV format transmits at the rate of up to one frame every eight seconds; in our process, the frame rate decreases to one per day. An observer can witness the extremely slow transformation of the “blank” bubble wrap into an image over the course of 10 hours.

VSSTV—Very Slow Scan Television is a project by Gebhard Sengmüller, in collaboration with Jakob Edlbacher (technical design), Johannes Obermayr (control engineering), Gerhard Proksch-Weilguni (additional mechanics) Ludwig Ertl and Andreas Konecky (programming).

Supported by: Ulmer GmbH Profil- und Fördertechnik, Bundeskanzleramt Kunstsektion, Kulturabteilung Land Salzburg, Kulturamt Stadt Wien



Very Slow Scan Television (VSSTV) ist ein neues Fernsehformat, das wir aufbauend auf *Slow Scan Television (SSTV)*, einem seit fast 50 Jahren von Funkamateuren benutzten Bildübertragungsverfahren, entwickelt haben.

1957 von Cophorne Macdonald konzipiert, benutzt Slow Scan Television das Kurzwellenband, um Fernsehsignale zu übertragen. Kurzwellen-Amateurfunk dient nicht nur zur allgemeinen Übertragung von Informationen („Broadcasting“, wie das bei normalem Radio der Fall ist), sondern benutzt das Frequenzband für persönliche Kommunikation, üblicherweise zwischen zwei Personen auf einer vorher vereinbarten Wellenlänge. Im Gegensatz zu Telefongesprächen kann diese Kommunikation aber von jedem Amateurfunkler, der sich auf der gleichen Frequenz befindet, mitgehört werden. Um über diese schmalbandigen, nur zur Übertragung von Sprache gedachten Amateurfunkkanäle Bilder übertragen zu können, ist eine starke Datenreduktion und der Verzicht auf Bewegtbilder nötig. Außerdem muss das Bildsignal in ein Tonsignal umgesetzt werden.

