Metaphors about the future date more quickly than any others. Seldom do people speak seriously any more about “surfing” the internet. And “information superhighway” has an inevitable historical tang of earnest boosterism for the first dotcom boom. But other outdated metaphors retain a certain glamour. Older than “information superhighway” is the somehow hipper image of an “electronic superhighway”, for example, which is now more than 40 years old. It feels dated but in a cool way, like William Gibson’s 1980s coinage “cyberspace”. And so it provides the perfect title for a new exhibition at London’s Whitechapel Gallery that explores how visual artists over the last half-century have responded to the emerging technologies of video, computing and the internet.

The first use of “electronic superhighway” is credited not to a media theorist but to the Korean American visual artist Nam June Paik, who foresaw developments that we would now recognise as YouTube and Skype. In his 1974 essay “Media Planning for the Postindustrial Society”, Paik announced the coming “electronic superhighways” of optical cable that would encircle the globe. He was a pioneer of video art and used bulky old analogue TV sets as modular components for sculpture. He made robots out of televisions, and a playable “cello” out of three stacked TVs. His 1994 video sculpture Internet Dream in this exhibition is a wall of 52 TV monitors, some mounted sideways, that play electronically generated imagery, heralding an age of infotainment saturation.

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As this exhibition shows, a lot of what we consider internet-age worries about gorging on electronic stimuli were developed first, not as a response to the internet, but in the age of television. Lynn Hershman Leeson’s interactive video installation Lorna (1979-82) lets the viewer use a remote control to inquire into the life of its subject, a woman who constantly watches TV and fears “everything”, and whose distinguishing characteristic is that she has not left her apartment in more than four years. (The technique of allowing the user to navigate between prerecorded video clips clearly prefigures modern commercial works such as this year’s critically acclaimed detective video game Her Story.) Such worries about entertainment addiction are brought up to date in Jeremy Bailey’s imaginary patents, jeux d’esprit that include one for an Apparatus for the Display and Control of Television Preferences as Facial Fashion on the Internet, in which the user’s face is decorated by the electronic projection of her favourite shows.

As the image-making capabilities of early computers were first explored, a highway between programmers and visual artists was built that to this day carries heavy two-way traffic. Computer Movie No 2 (1969) was made by the Computer Technique Group, a Japanese collective of art and engineering students, its abstract monochrome animations now recalling 1990s screensavers. The Belgrade-born modern artist Vuk Ćosić made an ASCII History of Moving Images in 1998, a series of film clips (including sequences from Battleship Potemkin,
Psycho and Deep Throat) re-rendered with thousands of green letters, numbers, and punctuation marks on a black background. It’s possible that such work influenced the code view of the computerised hallucination in the film The Matrix the following year; but ASCII art — named after the standard alphanumeric set on computer systems — has a much longer history (among its very earliest exponents were computer graphics researchers at Bell Labs in the 1960s), and ironic usages are still around, on Twitter, today.

Čosić is a pioneer of what is called net.art, and other artists have worked in similar areas by making playful images with obsolete browser technology, chat windows and the like. These pieces embody a rebellious spirit that aims for a détournement of the technology of modern bureaucracy, but the decision not to extend the aura of artistic appreciation to industrial practitioners themselves — the designers of beautiful web pages or app interfaces — is of necessity an arbitrary one. The anxious modern dynamic of influence and credit is most vividly encapsulated in the series entitled Jennifer in Paradise. In 1987, John Knoll, the co-creator of Photoshop, took a picture of his future wife, Jennifer, on the beach, and then used it as the first demo image for his program’s image-bending capabilities. Since 2013, the Dutch artist Constant Dullaart has reconstructed the image (using Photoshop himself) and reappropriated it as an artwork: a series of copies to which he has applied effects such as “glowing edges” and “plastic wrap”. (One recalls Walter Benjamin’s dictum that “the work of art reproduced becomes the work of art designed for reproducibility”.) So to whom does the modern image of Jennifer belong? Who is the artist? Is Photoshop merely a tool or an artwork in itself? Such questions are evidently germane to an age of ubiquitous digital remixing and reappropriation — even if Knoll himself is unimpressed by the use of his work (both the photo and the software) in this particular case.

The manipulation of photographic images has its own aesthetic history, of course, and some ways of doing it are already old hat. The New York-based conceptual artist Cory Arcangel is represented here by Snowbunny/Lakes, a giant-sized phone screen on which an image of Paris Hilton skiing has been treated with a deliberately old-fashioned rippling “lake” effect of the kind that abounded on the tasteless 1990s web. Most commonly, filters today are used on smartphone photo apps to create an automatic patina of old-school authenticity: with one press, software will make your snapshot look like it was taken with 1960s Fuji film, or by a Polaroid camera. This rampant pseudo-analogue aesthetic had reached some sort of tipping point when the Instagram hashtag “#nofilter” rocketed in popularity a couple of years ago. To announce #nofilter is to boast that your photograph is somehow a more direct and faithful representation of reality than those which lack the label, even though to take a photograph is inevitably to filter reality selectively in the first place.

It might also have been pertinent to see here Arcangel’s celebrated 2002 work Super Mario Clouds, in which the artist hacked a Nintendo video game cartridge and removed everything except the blue sky and white fluffy clouds. After all, Jacoby Satterwhite’s image En Plein Air: Music of Objective Romance, 2015 in this exhibition recalls nothing so much as a garish purply video game scene, and the digital interactivity on offer in museum works pales besides the richer possibilities available to the art enthusiast who sits down in front of a console. A critical version of the point is made directly by the German film-maker Harun Farocki’s video series Parallel I-IV, in which a sardonic woman narrator describes the history of how computer-generated imagery has attempted to represent the natural world (early pixelated scenes invite the comment: “Here are clouds formed from squares”) and human beings. A scene from a relatively modern shooter game — in which you can look carefully at characters’ faces only by training your gun’s crosshairs on them — is paused for philosophical reflection on the fate of a subsidiary computer-controlled character, who must forever enter and leave a shop according to strict rules: “This tragic constellation reveals to the hero the limitations of human action.”

Less overshadowed by video game technology are works that depend on solidity for their effect, such as Aleksandra Domanović’s beautifully crafted hands — like those of 18th-century automata — that poke out from the gallery wall holding assorted objects (an apple, a cigarette, a disc with a tai chi symbol on it), or Addie Wagenknecht’s cleverly titled Asymmetric Love, a chandelier from which sprout not candles or lightbulbs but CCTV cameras.

Many of the most recent works on display, indeed, coalesce around the theme of surveillance. The novelist and artist Douglas Coupland’s series Deep Face shows human heads obscured by Mondrianesque geometric
blocks, hinting at the computerised facial-recognition algorithms that power automatic tagging of friends on social media and are increasingly employed in security systems. Jill Magid’s Surveillance Shoe is a hilariously un-clandestine leather-strapped shoe add-on that trains a camera lens directly upwards from the wearer’s ankle.

In becoming a ‘hot babe’ of social media, Ulman was lasciviously admired and aggressively trolled. And what of the self-surveillance of the compulsive social media user who posts innumerable selfies? Amalia Ulman’s series Excellences & Perfections documents her scripted performance of such a lifestyle on Instagram and Facebook over several months in 2014. She pretended to have undergone breast augmentation surgery, followed by an obscure diet, and took pole dancing lessons, photographing herself in expensive clothes and beautiful interiors. In becoming a “Hot Babe” of social media, Ulman was lasciviously admired and aggressively trolled in equal measure, and the thoroughly committed performance confused and alarmed even her closest friends.

Visual art and electronic communications technology, the Whitechapel exhibition successfully demonstrates, have been evolving symbiotically for decades. But perhaps now, in the Instagram age, we are all artists on social media. If so, as Ulman’s work seems to suggest, we’d better know what kind of art it is that we are making.
