Werner Herzog's Lo and Behold: Reveries of The Connected World

Exploring the origins and impact of the Internet

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German filmmaker Werner Herzog's new documentary *Lo and Behold: Reveries of The Connected World* was released in August at select theatres across the US and for home viewing from various on-demand services. The movie—which examines the origins and implications of the Internet and related technologies such as artificial intelligence, robotics, the Internet of Things and space travel—has received generally favorable reviews following its premiere at the Sundance Film Festival in late January.

The work is divided into ten segments with titles like "The Early Days," "The Glory of the Net" and "The Future," with Herzog serving as narrator. Through a series of interviews, the director stitches his disparate topics together to explain something about how the Internet and World Wide Web were created and then to paint a troubling picture of the globally interconnected landscape.

The movie begins with a visit to the campus of the University of California, Los Angeles (UCLA), the birthplace—along with the Stanford Research Institute—of the Internet. The first interviewee is Leonard Kleinrock, one of the research scientists responsible for the development of the precursor of the Internet called ARPANET (Advanced Research Projects Agency Network of the US Defense Department). At age 82, Kleinrock is obviously thrilled at the opportunity to describe how the first-ever electronic message was transmitted between two points on the network.

As he opens a cabinet of early Internet hardware called a "packet switch," Kleinrock describes in detail the events of October 29, 1969 at 10:30 pm. As the UCLA sender began typing the word "login"—and checking by telephone with his counterpart at Stanford University—only the first two characters of the message were successfully transmitted before his computer crashed. Despite this seemingly failed communication attempt, Kleinrock explains that "Lo" was an entirely appropriate word for the accomplishment. "It was from here," he says, "that a revolution began."

With Herzog occasionally interjecting off-camera during the interviews, the director's goal seems clear enough. He wants the audience to share his sense of wonder and amazement at the transformative impact of the Internet. This is reinforced by equally intriguing interviews with several others who participated in the birth of the Net. The enthusiasm—and clarity on complex topics—expressed by these pioneers leaves one with a desire to hear more of their stories of discovery and progress.

As the film goes on, however, it emerges that Herzog has another plan; he abandons any historically logical accounting of the Internet and begins eclectically focusing on its various byproducts and offshoots, limitations and negative consequences. Herzog's interview with Ted Nelson—a philosopher and sociologist credited with theoretically anticipating the World Wide Web and coining the terms "hypertext" and "hypermedia"—becomes the starting point for these wanderings.

As a student at Harvard University, Ted Nelson began working in 1960 on a computer system called Project Xanadu that he conceived of as "a digital repository scheme for world-wide electronic publishing." Nelson also wrote an important book in 1974 titled *Computer Lib/Dream Machines,* a kind of manifesto for hobbyists on the social and revolutionary implications of the personal computer.

Although it is left unexplained in the film, the Internet is the technical infrastructure upon which the World Wide Web was developed beginning in 1989. Ever since the widespread adoption of the World Wide Web, Nelson has been a public critic of its structure and implementation, especially HTML (Hypertext Markup Language). He has called HTML a gross oversimplification of his pioneering ideas and said that it "trivializes our original hypertext model with one-way, ever-breaking links and no management of version or contents."

Why is it that HTML and the World Wide Web emerged as the dominant graphical layer of the Internet as opposed to a competing set of ideas? Is it possible that a solution more

comprehensive, expressing more completely the potential of the technology and more effective and useful could have been adopted instead?

One aspect of the rapid global adoption of the World Wide Web—originally created by Tim Berners-Lee in 1989 at CERN in Switzerland—was the open access policy of its inventor. As Berners-Lee, who is also interviewed in the film, has explained, "Had the technology been proprietary, and in my total control, it would probably not have taken off. You can't propose that something be a universal space and at the same time keep control of it." However, while the non-proprietary nature of Berners-Lee's creation was a significant factor in its success, it does not automatically follow that the core technology of the World Wide Web represented an advance over the ideas represented by others such as Ted Nelson.

These are important and complex questions that have been repeated again and again in the evolution of the information revolution of the past half-century, the further exploration of which would point to fundamental problems of modern technology, i.e. the contradiction between "what is possible" versus "what is required" within the economic and political framework of global capitalist society.

Showing little interest in exploring these matters more deeply, *Lo and Behold* goes on to present Nelson—a gifted but socially awkward man—as something of a high-tech Don Quixote. Herzog concludes the interview with the quip, "To us you appear to be the only one around who is clinically sane."

Having made nearly forty documentaries in his five-decade career, Herzog is accomplished at gaining access to people with compelling stories to tell. The interview with Elon Musk, founder of Tesla Motors and SpaceX, raises important points. A consistently outspoken opponent of artificial intelligence, Musk makes the following warning: "[I]f you were running a hedge fund or private equity fund and all I want my AI to do is maximize the value of my portfolio, then AI could decide to short consumer stocks, go long on defense stocks, and start a war. Ah, and that obviously would be quite bad."

This possible scenario under capitalism is not explored any further. While the US military is never specifically mentioned, it is remarkable that the only reference to war in the course of a 98-minute critical look at modern technology comes from a billionaire entrepreneur. Above all, Musk's comments show that the new technologies by themselves bring no fundamental change to the class relations within capitalist society; indeed the Internet and artificial intelligence in the hands of the ruling elite enable a further and accelerated integration of financial parasitism and imperialist war.

Lo and Behold. Given sponsored by the Ne Systems, a major corporate supplier of networking hardware and software, it is possible that such topics were off limits. However, the lack of a broader or coherent critical perspective is not something new for Werner Herzog.

While he made some interesting and disturbing fiction films in the 1970s (*The Enigma of Kaspar Hauser, Aguirre: The Wrath of God* and *Stroszek* in particular), the end of the period of radicalization had an impact on Herzog, as it did on other New German Cinema directors like R. W. Fassbinder, Wim Wenders and Volker Schlöndorff. There was always an overwrought element in Herzog's work and an emphasis on physical or spiritual excess, without much reference to the content of the action.

In media interviews about his latest film, Herzog has been careful to explain that he does not blame technology itself for the aberrations depicted. "The Internet is not good or evil, dark or light hearted," he says, "it is human beings" that are the problem. Following the advice of experts, Herzog suggests that people need some kind of "filter" to help them use the technology appropriately.

Leaving things so very much at the level of the individual does not begin to get at the source of the contradiction between the positive and destructive potential of modern technology. This contradiction, so clearly demonstrated during World War II with nuclear technology, is itself an expression of the alternatives facing mankind of socialism versus barbarism.

Lack of an understanding about—or refusal to acknowledge—the deeper social and class interests embedded in the forms of human technology leads to only two possible conclusions: (1) the utopian idea that technology develops automatically without wars and crisis toward the improvement of mankind, or (2) the dystopian belief that technological advancement always develops, without any hope of revolutionary transformation of society, in the direction of an existential threat to humanity. While Herzog and his producers believe they have provided a balanced perspective between these two, in the end, *Lo and Behold* comes down on the latter side.

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