A Preliminary Analysis of Challenges and Requirements for Presenters from the Widespread Application of Virtual Studio Technology (Postprint)

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Abstract

With the rapid development of computer technology and multimedia technology, virtual studio technology is being increasingly widely applied in program production. Virtual studios can simulate various scenes that are difficult to present on-site, enriching visual effects and enhancing program quality. However, the widespread application of new technology has also placed higher demands on hosts. This paper analyzes the challenges and competency requirements that hosts must confront under the new technological backdrop, taking currently successful domestic programs that have applied virtual studio technology as case studies.

Full Text

An Analysis of the Challenges and Requirements for Television Hosts Posed by the Widespread Application of Virtual Studio Technology

Abstract: With the rapid development of computer and multimedia technologies, virtual studio technology has been increasingly applied in program production. Virtual studios can simulate various scenes that are difficult to present in physical settings, enriching visual effects and enhancing program quality. However, the widespread adoption of this new technology also imposes higher demands on television hosts. This paper analyzes the challenges and professional requirements hosts must face in this new technological context, using examples of domestic programs that have successfully applied virtual studio technology.

Keywords: virtual studio; television host
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1. Background of Virtual Studio Technology Application

In recent years, rapid advancements in digital, computer, and multimedia technologies have driven continuous innovation in communication technologies. Such technological progress inevitably exerts profound influence on both communication methods and content. As media scholar Brian Winston argues: "In terms of the impact of media on society and culture over centuries, the influence of media content on communication itself is far less significant than the impact of media technology on communication" [1]. Virtual studio technology has emerged as a new television program production technology alongside these scientific advances.

Virtual studio technology essentially utilizes modern electronic chroma keying to digitally composite, in real time, footage of hosts or guests captured by studio cameras with computer-generated virtual scenes, producing synchronized composite images where both subjects and backgrounds transform together. This technology not only achieves perspective relationships and three-dimensional effects consistent with real scenes—making them difficult to distinguish from reality—but also enables rich scene transformations and extends the spatial boundaries of the studio. Moreover, virtual studio technology can display objects that would be impossible to bring into a physical studio, such as high-speed trains, spacecraft, or aircraft carriers. In weather programs, various meteorological phenomena like rainfall, snowfall, and typhoons can be incorporated into the studio environment. The technology also leverages icons, charts, topographic maps, and numerous other elements to enrich program visuals, providing audiences with more direct and immersive viewing experiences.

Due to its convenience, efficiency, richness, and effectiveness, virtual studio technology has become increasingly widespread and gradually indispensable in television program production. However, this has also created new difficulties and challenges for television hosts. How to overcome these obstacles while leveraging the advantages of virtual studio technology to enhance programs has become an essential topic hosts must address in this new technological landscape.

2. Challenges Posed by Virtual Studio Technology to Hosts

The foundation of virtual studio technology is modern electronic chroma keying. To facilitate this process, hosts work not at traditional anchor desks but in front of green or blue screens. Consequently, the first challenge hosts face is how to recapture their sense of presence in a pure colored background environment that lacks physical reference points. When utilizing virtual studio technology, various elements are added to the 画面 only during post-production. This raises a critical question: how can hosts achieve a state of "having objects in mind and eyes" when facing an empty space during pre-production recording?

Furthermore, to fully leverage virtual studio technology, hosts must move beyond simple broadcasting and actively interact with various elements within the virtual environment. This requires not only coordinated body language but also a shift in linguistic style from pure "broadcasting" to a combination of "broadcasting and talking," or even talking-dominant modes. How to complete complex interactions and adjust their linguistic style accordingly represents another significant challenge. Additionally, since hosts may be seated or standing when using virtual studio technology, standing positions introduce the additional complexity of precise movement and positioning.

3. Requirements for Hosts in Virtual Studio Technology Applications

Modern electronic computer technology enables the creation of any imaginable virtual studio scene. For instance, during the 29th Beijing Olympics, studio backgrounds were designed as Tiananmen Rostrum; during the C919 test flight coverage, reporters appeared against the backdrop of a large aircraft parking apron; and when exploring the Okinawa Trough, the background became the exposed seabed after water receded. Although hosts work before a monotonous green screen, the final composite effects are remarkably rich and varied. Bridging this substantial gap between the actual and virtual environments depends entirely on hosts enhancing their own sense of scene presence.

To strengthen scene awareness, hosts must first possess adequate understanding of the scenes themselves. Hosts must assume partial editorial responsibilities, engaging in advance communication with the virtual scene production team to comprehend what virtual environments will be created post-production. In Zhang Quanling's news program exploring the Okinawa Trough, for example, the post-produced scene depicted seawater parting like two walls to reveal the trough bottom—generally flat but with protruding boulders—where Zhang stood on the flat gravel. Without prior knowledge of this scene, she could not have accurately grasped or described the sense of place. Beyond understanding virtual scenes beforehand, hosts must also adopt different postures appropriate to specific settings. In the C919 test flight coverage series, several scenes were produced: a large parking apron, airport terminal, and C919 cabin interior. Hosts should distinguish their presentation styles accordingly—expansive gestures and projected voices for the spacious apron, more contained movements for the terminal, and intimate, conversational delivery for the confined cabin space where excessive gesturing would appear unnatural.

Whether the entire background or only the foreground is virtual, hosts must interact with scenes and scene elements. During the 2014 Brazil World Cup broadcast, CCTV-5 employed extensive virtual 植入 scenes, primarily including virtual floor foregrounds and venue models. This approach combined real and virtual elements—the anchor desk was physical, while the floor area and displayed elements were virtually produced. Such hybrid scenes already appear highly realistic, with relatively simple interactive elements. In these cases, hosts

must focus on linguistic design and description for interactive elements, complemented by precise gestures and movements. For instance, in the C919 coverage, when comparing the aircraft to an automobile, a car entered from the right side of the screen in post-production. The host's guiding gesture for the car's entry and stopping motion made the appearance natural. When comparing component numbers between the car and C919, accurate pointing was essential; otherwise, the entire composition would appear artificial.

The difficulty of interacting with fully virtual backgrounds increases significantly. Using the "Dreaming of Space" special report "Inside Shenzhou-11" as a case study, we can analyze how hosts should effectively interact with completely virtual environments. Host Wen Jing employed explanatory language, coordinated with body language and movements, to guide viewers through the spacecraft's interior and exterior structures. Several techniques proved highly effective: descriptive lead-ins, precise guiding gestures, relaxed body language, detailed description and control, physical props, and vivid language. Unlike traditional program introductions, Wen's opening directly presented impactful imagery: "Look, Shenzhou-11 passes through the screen and steadily docks before me." Her explanatory gestures were strongly directive and precisely positioned. When describing the spacecraft's structural components—propulsion module, re-entry module, orbital module, and docking ring—her gestures landed with precision, adapting to each section's varying lengths. After entering the re-entry module, though shifting from standing to a more constrained sitting position, she flexibly employed gestures to indicate the control panel and side seats. Such gestures not only seamlessly integrated the host into the post-produced virtual environment but also effectively guided audience attention while balancing the constraints of a seated position.

Emphasizing detail description and control enhances communication with virtual scenes. For example, when describing the re-entry module's interior, the host not only introduced her own seat but also mentioned the seats on both sides, specifically noting that since only two astronauts were on this mission, the space for the left empty seat would be used for experiments and daily necessities. When describing the control panel before the seats, she mentioned that the buttons were larger and more widely spaced than ordinary buttons because astronauts wear heavy spacesuits during launch and re-entry, making their fingers thicker than normal—hence the specially enlarged buttons. Such detailed descriptions strengthen hosts' sense of "being there," tightly integrating human activity with the virtual environment. However, since hosts cannot see these details during actual presentation, they must consciously design and depict such specifics when reviewing scripts beforehand. Only by "having objects in mind and eyes" can they achieve effective performance.

Physical props can also enhance interaction with virtual scenes. In the program, Wen Jing used a physical control stick when introducing the control panel and physical meal packs when presenting the astronauts' "space kitchen." Since physical props can visually transition from the virtual background into the host's

hands in the final effect, they enhance overall realism and provide more concrete references than language alone. Vivid language becomes particularly important when using virtual studio technology, requiring hosts to possess stronger spatial planning, spatial imagination, and predictive abilities regarding final presentation effects. Moreover, the variability and fluidity of virtual scenes demand that hosts present postures harmonious with the scenes. Consequently, hosts must demonstrate stronger linguistic tension, narrative ability, and affinity to enable virtual backgrounds to fulfill their true potential.

4. Conclusion

The application of virtual studio technology is gradually transforming news communication methods and content. It is believed that in the future, virtual studio technology will become even more advanced, providing communication with more three-dimensional presentation effects, more realistic virtual environments, more authentic scene interactions, and fresher observation perspectives. Virtual studio technology will be increasingly applied across various program productions. This requires hosts not only to adapt to technological changes but also to better utilize and cooperate with virtual studio technology to enhance program quality and provide audiences with improved viewing experiences.

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Note: Figure translations are in progress. See original paper for figures.