# Visual Expression of On-Camera Journalists in Science and Technology News Reporting: Post-print

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## Abstract

As science and technology continue to advance, science and technology news has become a crucial avenue for public understanding of scientific and technological developments. This paper analyzes and explores, from the perspective of on-camera journalists, the methods and techniques for visualized expression in science and technology news reporting through experiential reporting and the employment of emerging technological means such as augmented reality.

## Full Text

### A Brief Analysis of On-Camera Reporters' Visual Expression in Science and Technology News Reporting

**Abstract:** With the development of science and technology, science news has become an important way for people to understand scientific advances. This paper examines how on-camera reporters employ experiential reporting and emerging technologies such as augmented reality to achieve visual expression in science and technology news reporting.

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Science news reports on recent events in the field of science and technology. These "scientific facts"may include scientific achievements and their applications, national science and technology policies, or the accomplishments of scientific workers and activities within the scientific community [1]. During the interview and writing process, journalists must both respect the characteristics of natural science and adhere to the reporting principles of journalism [2]. Television news reporting on science and technology must satisfy these two requirements while also leveraging the unique advantages of television media through the integrated use of sound, visuals, text, and on-camera reporters. Among these elements, the visual expression of on-camera reporters plays an increasingly important role in the communication of science and technology news.

On-camera reporters refer collectively to television journalists and news anchors who convey information, conduct interviews, and comment on events on camera at news scenes [3]. In science and technology news reporting, on-camera reporters often serve as witnesses, experiencers, and reporters of scientific and technological developments. Their visual expression manifests in several specific ways:

## 1. Visual Expression in Experiential Reporting

In experiential science and technology news reporting, the on-camera reporter' s on-screen presence directly affects the quality of the report and the success of the program. A qualified experiencer must possess keen observational skills, active thinking, and substantial knowledge accumulation, demonstrating an ability to discover noteworthy elements during interviews while integrating personal feelings and reflections [4].

### 1.1 The "Leading" Expression Style

On November 5, 2018, the first China International Import Expo opened in Shanghai. CCTV' s chief science and technology reporter Shuai Junquan appeared three times in the report titled "First China International Import Expo Opens Today: Intelligent Security, a Highlight of the Expo." His appearances included experiencing the complete intelligent security process at the expo entrance, visiting an intelligent security community in Qingpu District, and experiencing intelligent traffic management at an intersection on the Shanghai Bund. In each appearance, he employed a "leading" style of expression, such as: "The first China International Import Expo has fully deployed the latest intelligent security screening system. But just how intelligent is it? Let' s experience it together—"

This "leading" expression, combined with live broadcast documentation of the exploratory process, endows the scene with a special sense of authenticity. It makes viewers feel as though they are experiencing the scene alongside the reporter rather than simply watching edited footage, thereby creating a sense of "personal witnessing" in the audience' s viewing psychology [3].

### 1.2 The "Full-Sensory" Expression

Some content in science and technology news reporting is difficult to fully capture through camera footage alone, requiring on-camera reporters to employ "full-sensory" expression. For instance, in the live news report "180-Day Manned Experiment Ends, 4 Volunteers Exit Cabin," the reporter entered the space capsule, observing and describing while walking. He introduced the spatial environment and basic facilities: the slightly pungent smell in the medical testing area, the size and comfort level of the volunteers' beds experienced by lying on them, and the taste of tomatoes grown by volunteers in the plant chamber. By comprehensively employing visual, olfactory, tactile, and gustatory senses, the reporter visually presented all aspects of the space capsule to the audience. This three-dimensional reporting satisfied audience curiosity about the space capsule and the volunteers' living conditions.

### 1.3 The "Detailed" Expression

Renowned journalist Mu Qing once stated: "Obtaining and handling details is a comprehensive reflection of a journalist' s ideological level, news sensitivity, interview experience, and writing skills." For science and technology news, detailed expression by on-camera reporters is particularly essential when interpreting abstract scientific concepts and complex technological achievements. This requires journalists to identify the core key points of a science and technology topic and, if suitable for on-camera reporting, design their presentation method around that point. By vividly showcasing a detail of that point and then supplementing it with broader information, the combination of point and surface creates clear yet vivid explanations. Attempting to cover everything equally makes it difficult for viewers to retain a strong impression. In the news report "Xuanwei, Yunnan: Liquid Metal—Soft Body, Hard Power," the reporter grasped the key characteristic of liquid metal' s free transformation between states. Through a small experiment, he demonstrated that the same liquid metal at the same temperature existed as liquid in a water cup and as solid in the shape of a soup spoon. Subsequently, the reporter placed the spoon-shaped solid into a cup of hot water, and as the temperature changed, the solid immediately began to melt into liquid. This detailed contrast allowed the audience to intuitively sense the magical transformation of liquid metal, sparking curiosity and generating greater interest in watching the subsequent background introduction about liquid metal.

### 1.4 Popularized Language Expression

Compared with political news or social news, science and technology news has particular characteristics, including numerous abstract scientific concepts, professional terminology, and complex technical issues. Translating these specialized terms into language that the general public can understand—achieving both depth and accessibility—requires on-camera reporters to employ popularized language expression. This can be accomplished through rhetorical devices or by

using familiar colloquialisms and even internet slang.

In the program "FAST Main Project to be Completed Today," the reporter used metaphors from the very first appearance to describe his location: "If we continue to compare this telescope to a giant pot, I am currently at the middle position on the back of the pot." When introducing the overall telescope overview, he transformed monotonous numbers into familiar concepts through analogies, making them immediately understandable. For example: "The steel used for this ring beam alone exceeds 5,000 tons, almost enough to build an Eiffel Tower" ; "Like the steel cable beside me, its strength is sufficient to lift 500 people my size"; and "This reflective surface, assembled from 4,450 reflective panels, covers an area equivalent to 30 soccer fields."

## 2. Effective Utilization of Emerging Technologies such as Augmented Reality

Augmented Reality (AR) is an interactive technology that uses computers to generate realistic visual, auditory, force, tactile, and motion sensations. It employs computer graphics and visualization technologies to create virtual objects that do not exist in the real environment, uses sensing technology to accurately "place" these virtual objects in the real environment, and integrates them seamlessly through display devices, presenting users with a new environment featuring realistic sensory effects. In science and technology news programs, AR technology can make news more visual and three-dimensional, rendering invisible elements visible and incomprehensible content understandable, enabling audiences to better grasp the essential connotations of news. Combining AR technology with on-camera reporting can make entire news programs more vivid and dynamic, a format more readily accepted by viewers [5].

On July 3, 2018, China completed the hoisting of the final reflective panel for the world' s largest 500-meter single-aperture spherical radio telescope in Guizhou, marking the completion of the main project. Conventional reporting modes using footage, narration, and on-camera appearances struggle to comprehensively and three-dimensionally interpret such a massive structure. This news report adopted the approach of "on-camera reporter + augmented reality technology" to "interestingly interpret"the world's largest radio telescope. After its premiere, multiple programs across different channels, including "Common Concern" and "China News,"rebroadcast the segment, giving audiences a refreshing viewing experience. This innovation effectively enhanced news quality and communication impact [6].

## 3. AR Application Techniques

### 3.1 Proper Scene Selection

Although the AR short video in the report "Interestingly Interpreting the World' s Largest Radio Telescope" lasted only one and a half minutes, it consisted of

four long shots transitioning through four scenes. The first scene on the ring beam introduced its steel consumption; the second in front of steel cables introduced their strength; the third with the reporter beside the reflective surface on the observation platform introduced the mirror; and the final scene on the mountaintop introduced the overall scale of the telescope. These four scene selections surrounded the entire telescope, introducing four distinct aspects.

Additionally, scene selection requires careful design of shot composition, organically integrating every element within the scene with AR technology while also ensuring sufficient negative space. A critical aspect of AR technology is having adequate area for presentation, as it must rely on the main subjects in the footage. For instance, when Shuai Junquan introduced the steel cables, steel cables had to be visible beside him with sufficient negative space, enabling post-production teams to conveniently display desired content and themes.

### 3.2 Clever Scene Transitions

In the one-and-a-half-minute AR short video, on-camera reporter Shuai Junquan needed to transition between scenes three times, achieving smooth transitions through the following three methods.

First, using the reporter' s dynamic presentation to achieve transitions. In such reports, the footage must "move," either through the reporter' s movement or through camera movement while the reporter remains stationary. In the program, Shuai Junquan' s first appearance was at the telescope construction site. After providing a general introduction to the project, his statement "Now let' s take everyone to see it" and his turning to leave smoothly transitioned to the AR short video.

Second, achieving transitions through the same object or strongly related objects, which often creates logical continuity in viewers' visual perception and helps them accept the entire scene transformation [6]. Shuai Junquan introduced the giant reflective panels from the ring beam, which led to discussion of the nearly 9,000 steel cables used to support the panels and the massive net woven by construction workers.

Third, using visual effects combined with physical objects in the scene for transitions. In the program, Shuai Junquan introduced the telescope' s enormous size from both the observation platform and the mountaintop. When presenting from the observation platform, the footage transitioned to an aerial panorama incorporating AR technology, which then smoothly transitioned to the scene of him on the mountaintop.

## Conclusion

The primary prerequisite for on-camera reporters to achieve visual expression in science and technology news reporting is thorough preparation before interviews. Reporters must gain comprehensive and in-depth understanding of their

subjects, accumulating abundant materials regarding the full picture of events, processes, individuals, and details [6]. Only by knowing both oneself and the subject can reporters determine news themes and plan news expression formats. For example, during the import expo coverage, on-camera reporter Shuai Junquan and the CCTV reporting team spent an entire day at the Shanghai Municipal Public Security Bureau to deeply understand the command system during the expo, ultimately determining the reporting focus. Beyond planning, careful design and rigorous rehearsal are also essential. For instance, when reporting on intelligent traffic management, the reporter required more than ten hours of rehearsal and filming to effectively present the intelligent connections between pedestrians, traffic lights, sidewalks, and light poles within just over one minute of on-camera time, achieving perfect audio-visual synchronization and precise timing.

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