EXPANDED CINEMATOGRAPHY
The Next Stage in the Development of New Visual Aesthetics and the Related Technologies in the Entertainment Industry

Position Paper of the Faculty and Consultants of the Global Cinematography Institute (GCI)

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I. Global Cinematography Institute

Global Cinematography Institute (GCI) is an educational and research institution devoted to the unification of all cinema image making arts and crafts brought together in the extension of the cinematographer's profession in the modern digital and virtual realms. It is an interdisciplinary school, which already instructs at a very high level, and will continue in its role as the creative lab for visual professionals of different disciplines and specialties.

Our purpose is to pursue new forms and new solutions to technological changes, as well as the aesthetic ones. The Global Cinematography Institute (GCI) curriculum, along with new disciplines, is based on our belief in the studies of fundamental disciplines and the basic rules of image making such as Lighting, Composition, Color, etc.

Global Cinematography Institute (GCI) has observed the necessity for the inclusion of new subjects; including career development, art history, the psychology of the entertainment job, the history of cinematography and special effects in order to discover and to explain past and current achievements, and to encourage and help create the path of creative thinking.

The target of our educational style is in the awakening of the minds enthusiasm to achieve greatness in cinematography and related fields with taught skills, and to succeed in the melding of visual components of Imaging.

Global Cinematography Institute (GCI) developed and continues to perfect educational principles which its faculty calls "TISA". TISA is our guide in the development of new talent. Our priorities are to recognize, develop, and nurture the following qualities in our students:

**Talent**, its recognition and nurturing.

**Imagination**, its development and its application to practical need.

**Skill**, its development and expansion for a sustainable career.

**Attitude**, psychological preparation of students in their future careers.

Our task is to prevent technological shock. To preserve the creative approach to images and to reconcile artistry and technology.

The Faculty of Global Cinematography Institute (GCI) represents the unique combination of world-class experts and specialists in various disciplines united by the devotion to education in Expanded Cinematography.
II. Expanded Cinematography

Global Cinematography Institute (GCI) is forming a new visual, artistic, and technical phenomenon – Expanded Cinematography®. It is the combination of live and virtual cinematography dominating the visual landscape of today’s image making in motion pictures, television, web–content, gaming and more to be discovered.

Expanded Cinematography is a state of mind which is recasting the production process around creative choice, rather than developing and working around barriers created by gaps in the ever evolving technical knowledge. It creates a new unity of art and technology, the conversion of existing crafts and the activities of cinematography, special effects, visual effects, virtual lighting, previsualisation, etc. as well as emerging visual practices, into the newly crafted profession – Director of Imaging (D.O.I.)

The Director of Imaging (D.O.I.) will synthesize in one person, the visual artist, craftsman and technologist. The future of the Director of Imaging is the artist–designer–technologist that is able to comprehend and solve any tasks which modern production can put in front of him or her.

The main direction of our collaborate efforts, is to enrich the artistic side of cinematography and image–making in general. Only the continuous ability to produce visually literate, original, and artistically enhanced, images will progress and enrich visual storytelling and extended cinema – art genres of the 21st century.

III. The Current Situation

Recent feature films have amplified the traditional role of the cinematographer and made even more people appreciative of the cinematographer’s artistry and craft. However, today and going forward, images in film are no longer produced as the result of only the traditional tools of cinematography.

The Academy Awards selections clearly illustrates the issue. It is not a coincidence that for the last four years the Oscars for both Cinematography and Visual Effects were given to the same film. This consecutive trend is a strong confirmation of a the new artistic and technical visual paradigm that is emerging, and will continue, ultimately producing a new methodology.

Since the conception of film and the development of motion pictures, cinematography and imagery have been synonymous. While the cinematographer has continued to evolve, he remains the acknowledged contributor who has been the trusted steward of the artistic and technical quality of the film image. However, in the past, professional cinematography was almost monopolistic – the defacto standard in the art of visual storytelling within motion pictures. Not anymore!
With time, the technology and visual aesthetics have changed, but cinematic principles regarding aesthetics and much more that go into creating meaningful images, remain constant.

The digital revolution, followed by the democratization of tools and the expansion of media, along with the exploding marketplace, continue to cause changes at an exponential rate. It has also led to an increase in the amount of visual storytellers who modify, influence, and change, and will continue to change, the entire aesthetics of modern image making.

The technology of creating visuals is all around us, including the visuals in motion pictures and many other delivery disciplines. Global Cinematography Institute (GCI) understands how perception and audience tastes are changing and the significance of why advancing the art and science is more important today then ever.

IV. Technology

The technological trend of digitization and sub-sequential computerization of traditional film workflow started in the 1980’s with the replacement of linear editing with non-linear editing. This in turn, led to the abandonment of print dailies in favor of the telecine transfer.

Increased processing power, new advances in capture and acquisition and the continuous progress of sensor and camera technologies at advancing rates has put many talented artists and craftsmen into a difficult position as we transition into the new contiguous model of creative and innovative content.

With technological advancement, and the numerous, ever changing social and cultural trends abounding, the profession can not leave the aesthetics of motion picture imagery intact in the old paradigm.

Global Cinematography Institute (GCI) embraces the new and evolving technologies. Our focus is on integrating new technology into the many arts and forms of storytelling and visual careers that exist today. This evolution will play a critical role in our research and development. This will affect why, how and what we learn, unlearn and relearn as we move forward.
IV a. Camera

The camera and its optical developments will remain the center of gravity around live action and virtual production. Digital cameras have done as much to change the model of creating and capturing images on the set, as non-linear editing has done to change the post production workflow.

As the line continues to blur, the need for a Director of Imaging will be critical from early in the previs, to final color correction in post. Moore's law will continue to impact the development of the camera as this "future camera obscura" returns to a box with a hole in it. Digital and nano-technology will continue to develop beyond the physical limitations of the past filmmaking tools with higher resolution, broader bandwidth, more advanced micro-sensors giving us ever increasing opportunities in creating images.

Global Cinematography Institute (GCI) understands the relationship of this critical blend of art and science, this is and will be the focus of our curriculum in developing current and future experts for the various disciplines necessary in current and future careers.

IV b. Virtual Production and Virtual Cinematography

With the progress of digital technology, the concept of the virtual cinematographer is a reality. In the early 1970's many foresaw a future of cinema and cinematography in which location shooting would partially disappear into computer augmented and/or generated images. Methods and techniques have been developed to allow for virtual filming of realistic computer generated imagery.

Virtual Production has emerged from the broad availability of agile, high quality 3D tools. This software has made it possible to continuously visualize and refine the evolving media experience of moviemaking during the blending of preproduction, production – be it stage or location – and post production.

Currently, developments in Virtual Production, and in Virtual Cinematography in particular, are concentrated on the expansion of advances in the new, real-time technology which supports "continuous" visualization. Thanks to the initiation, by Global Cinematography Institute (GCI), of Expanded Cinematography® – the new visual, artistic, and technical phenomenon is reality.

The results of the Global Cinematography Institute (GCI) and the industry's efforts, means vastly increased volume and quality of significantly improved creative choices. This spectrum of choices has existed in different forms for a long time. New technologies have extended the range of choices and moved forward the decisions to earlier implementation stages in the process. This change drives cost and value, with more deeply integrated imagery now readily available to lower budget projects.
The current industry tendency is to delegate responsibility to engineers and technicians, simply because knowledge of hardware and software tools is a specialty. This should not be the default option for the artistic and aesthetic aspects of the image.

The upside is that Virtual Production is now the place where traditional production experience can be applied to choices in the emerging creative flexibility of digital cinema. This refers to planning, execution, and finishing, whether before, during or after the creation of a computer generated image, compositing hybrid or a physical shot is made on stage or location.

With the initiation of the D.O.I. the Global Cinematography Institute (GCI) faculty will focus on this role as a pivot leader in the visual adaptation of the story, while doing the work of Expanded Cinematography. The Global Cinematography Institute (GCI) faculty will continue to focus on both the transitioning and new careers that support the world of virtual production. This is where continuous visualization allows for more focused and cost effective creative choices.

**IV c. Virtual Lighting**

The capture of live action sequences was once limited to film and then analog video in photographing “photo real” images. The advancement of computer simulations and real time interactive graphics (video games, etc.) continues to reach and exceed eye-limiting fidelity. Advances in technology, and the hybrid forms available for creating imagery, is making real and/or virtual visuals indistinguishable—one from the other.

The “uncanny valley” was a term coined to define the discomfort and response of humans to the lack of realism in computer generated (CG) characters when artists and engineers were over reaching what was possible. The D.O.I. will ensure the proper use of “uncanny valley” as a required human reaction. We will definitely better understand and apply properties like this in the next five years.

The artistry behind this has to do with traditional matte painting and the painting techniques applied to CG with success. It is only when CG fails to lure us in that we notice it. CG lighting is mainly used to replace existing environments and objects, (not only monsters and space ships), but it will systematically continue to impact every shot in a movie, this is already the case for high—end commercials.

We used to think of scanners for digitalizing solid objects, but soon they will be capturing live—action environmental lighting accurately. As hardware becomes more and more powerful and affordable every day, it will allow us to develop and use more sophisticated illumination methods. Also the development of software is becoming more robust and user friendly for the artist as well as the end user. This is bringing more input into the process earlier in the creation of all types of content.
The traditional barriers between digital lighting created in 3d and its treatment in post—production (known as compositing) is disappearing rapidly, lighting and compositing will be combined in the very near future. CG Lighting artists already spend a lot of their time compositing their lighting, anticipating what they will need or compositing and making changes in 3d before testing the results again. Eventually John Alton just might be right with his "painting with light" analogy. This means that the artist—technician needs a broader skill set in the art and science of creating high quality, meaningful visuals.

Our ability to simulate any illumination scenario is growing exponentially. Our illumination methods are more and more synchronized with information gathered from our world. Many think of these advancements as a danger to their trade, thinking that we will just be pushing buttons in the future. Well, that was never the case in the past and certainly will not be in the future. Owning the best digital camera be it an Arri Alexa, RED, Sony or Cannon will not make you Gregg Toland, ASC any more than owning a word processor makes you William Shakespeare or Mark Twain.

Contrary to popular belief, when it comes to the highest quality of visual experiences, we do not believe that creating lighting in CG is any easier today or will be easier in the near future just because our tools are more accurate and powerful. There is a tremendous amount of art and knowledge necessary in creating imagery that is meaningful to critical worldwide audiences. That will not change!

Global Cinematography Institute (GCI) is committed to supporting and developing the artist—technicians of the future who will bring us the next wave of powerful images through the visual arts.

IV d. Previsualisation

Modern films require significant amounts of planning. Since the successful integration and execution of computer graphics in the motion picture, the audience's desire for visual sophistication has grown. The result has been the fragmentation of the visual and sometimes creative flow of the film, and the compartmentalized construction of the deliverables by completely unrelated entities. As a result of this phenomena directors seek a means to previsualize their projects.

By introducing computer animation technicians into the preproduction process we have enhanced the director's ability to acclimate to the new digital production workflow. Previs contributes to both the efficiency of the creative and the production process.

Today, previs has expanded its role past standard visual effects planning and now assists in planning of motion control scenes, stunt coordination, virtual location scouting, look development, etc for both tentpole films and small and medium sized independent productions. Producers and VFX supervisors are already benefiting from
these technologies by giving them the ability to prepare bidding packages and streamline the production process.

On average, most directors are concerned with the conceptual and storytelling aspects of previsualization, where VFX supervisors tend to be more concerned about technical accuracy of specific shot requirements. Determining which role has priority at any given moment ensures a smoother transition from one phase of production to the next. An experienced producer is usually present to moderate financial factors between the two primary users. However, with a Director of Imaging present during the previs process, there would always be a representative available with a camera specialist’s perspective. This could alter everything. The lack of an aesthetic gatekeeper, with a visual perspective, during preproduction and previs, is generating a noticeable vacuum between the director and his cadre of CG VFX specialists.

Global Cinematography Institute (GCI) is committed to teaching this new integrated production model. It all starts with understanding the benefits and execution of previsualization.

IV e. Image Management

Technological advances in production and post are coming at a breakneck pace. New cameras with more resolution, RAW recording capability, and an increasing variety of configuration options are being released in shorter and shorter intervals. Post tools and the hardware, on which they run, as well as the level at which they are able to manipulate images, are being improved seemingly monthly. As a result, image management and maintaining control over the DP’s vision from prep, to set, to post is more important than ever.

With DP’s being asked to shoot 4K and 5K for television, web, and tablet/phone/watch release, and the commensurate ability to manipulate, resize, reframe, and sometimes even relight those images, DP’s are faced with the daunting task of maintaining control over their vision as the images flow from analog lenses to digital bits, inevitably going through several stages of compression and compositing prior to reaching their final destination, the viewer.

Being able to select the proper tools for the job, seeing the images accurately as they are being recorded, taking advantage of on–set color correction and dailies (when practical) understanding the role and interaction of the DIT, the colorist, and the VFX house in maintaining the image he wishes to create have all become part of the DP’s toolkit. A few years ago this knowledge was merely interesting, for today’s DP, it is a necessity.

Global Cinematography Institute (GCI) will focus on the specifics, as well as the multidisciplinary skill sets that are all contributors to the process will need and will be needed.
IV f. Cinematography for Videogames

Video games are now the part of modern “pop” culture like film, comic books, television programs and animation. Franchises like “Call of Duty”, “Halo”, “Tomb Raider”, “Assassin’s Creed” have reached a modern cult status much like their film and television counterparts, “Star Wars” or “Star Trek”. Today, with the next generations of consoles, “AAA” games are evolving toward high end imagery very close to motion pictures imagery. Light, color, camera and composition are used to create an emotional interactive experience.

The narrative and interactive components of a video game, “gameplay” and “cinematics” (real time or “pre” and/or “post rendered” imagery) are running complex imagery at 30 or 60fps on various “game engines” and hardware.

The game genres such as “Adventure Games”, “First Person Shooter”, “Massively Multiplayer Online” and others have a deeper impact on the visuals, art direction and cinematography than in more traditional narrative media. The state of the art techniques used for high end narrative and animation motion pictures projects which combine “traditional”, VFX & Virtual Cinematography technologies are used daily in the games industry. Currently the technologies utilized in the “average” game show a significantly larger amount of “expanded cinematography” than in most feature or animation films.

It’s very interesting to see the converging trend between narrative films and games toward to similar models of their use of the “virtual” stage, full motion capture, real time lighting, virtual camera, image management and color correction. Game cinematography is rapidly evolving and progressing in an accelerated way today, as traditional film cinematography went through in the first part of the 20th century.

While Game Cinematography is a relatively new concept within the game studios, there’s now a real need in experts in this field in the order to expand the visual boundaries of this fast moving industry, as well as to develop further this facet of “Expanded Cinematography” both artistically and technically.

V. Aesthetics

Pictures (hieroglyphs, drawings, paintings, etc.) pre photography have always been the most universal means of revealing, understanding and communicating a time and mood. With the growth of the cinema in modern society, the role of images continued to grow. If in the early days of cinema, images conveyed the plot and the story, then later images became capable of visualizing and illustrating to tell story and very often substituted for the role of the literary storyteller.

Yet aesthetics, the perception of the pictures and its symbolism, have changed and continue to change. The definition of “what a good image is” as written by British
scientist Charles E.K. Mees in his book “Theory of the Photographic Process” (written in the mid-30s) said that a “good professional image has to have the whole range of tones and half tones from black to white.” This does not reflect today’s, 2013’s reality. For the producers, directors, and cinematographers who belong to Generations X and Y, the image quality of “Lawrence of Arabia”, “Days of Heaven” and others may be overlooked by emerging aesthetic tastes. These tastes may not resonate with today’s stories and the genres of contemporary audiences.

The classical tradition of the cinema was inspired by, and derived from, classical paintings and painters. New inspirations from the art of photography, pop art, rock videos of the 1980’s, video games and the other internet and web based offerings are more relevant to contemporary visual storytelling than the inspirational cinematic output like the works of Caravaggio (1571-1610), Rubens (1577-1640), Georges de La Tour (1593-1652), Rembrandt (1606-1669) and other classical masters of oil painting.

The technological revolution has enabled filmmakers to develop the new language of cinema. It is possible to say that we’ve entered a new era by marrying basic cinematic techniques to computer and digital sciences. The new marks of the next generation’s development started for cinematography in Stanley Kubrick’s “2001: A Space Odyssey” in 1968, continued in 1977 with “Star Wars” and a few decades later with “Avatar” in 2009, to name just a few. All of these films created a new cultural phenomenon based on technological developments. A major consequence of this is the change of the traditional roles and relationships between the Director, Director of Photography and SFX/VFX Teams.

Technological progress and cultural influences allowed creators to make images more complex, and they are often layered with a variety of multifaceted connotations; pictorial, musical, television, games, apps and social networks. But, even with new visual trends and the changed culture of imagery, cinematography remains, one of the forms of artistic activity subordinate to laws and conventions of the art of image making, and which depends on the continuation and succession of cinematography’s art tradition and history.

Global Cinematography Institute (GCI) will integrate the exciting new developments of image creation with the valuable skill and knowledge that has informed the visual experience of mankind. By educating current experts, new creators, and new audiences Global Cinematography Institute (GCI) will advance the visual aesthetic of story and beyond.
VI. Resulting Changes

In the 100 plus years of motion pictures, the hierarchy and creative and technological responsibilities of motion picture production developed and delegated appropriate control among the many people required to produce motion pictures.

This hierarchy or the conventional structure fluctuates by being influenced predominately, by either creative aspirations and challenges, or by groups with very specific technical knowledge, and it’s inherent limitations.

This technological progress has developed and transitioned the role of VFX/EFX departments. Since the 1970s (and long before digital post) VFX has been a specialized technical process. Early VFX Producer’s relied on the phrase “it’s cheaper to fix it in post” as a means of promoting their companies and services. Now some VFX producer’s completely address corrections with the concept, “we’ll create it in post”.

This has, unfortunately, resulted in two challenging outcomes:

First, a vast gap has developed between the cost/process models in physical and virtual production, to the point of destroying talented companies abilities to compete in the overlapping, undefined gaps. We now have a complex economic structure that will damage the current, and possibly future, advancement of the entire industry. We must create a sustainable system. This system must help the industry evolve and prosper. The shock introduced by this new environment, must motivate us to take a holistic approach to advancing the industry.

Second, there is often a disconnect in the visual style of non-VFX and VFX shots in films. Currently, we observe a phenomenon where previously separated crafts are merged. This has created a new unified approach, in which they carry out work, for new kinds of productions. This new approach combines elements of Traditional and Virtual Cinematography, SFX/VFX, Virtual Lighting, Pre-visualization and Image Management.

What makes today’s situation even more confusing is that Traditional Cinematography exists in parallel with Virtual Cinematography. The dividing line between these areas of responsibility, and the influence on the final results, have become extremely fuzzy and challenging for all departments.

One example of this “mashup” is where cinematography combines very specific groups of arts and crafts. This creates additional blending of the aesthetic and the technical process which requires vigilant and continuous collaboration and communication regarding storytelling, visual development, enhanced technology and all of the filmmakers different aesthetics and technical requirements, as well as their areas of crossover.
VII. Global Cinematography Institute (GCI) Unification Vision:

The Alternative Future

The combined intellectual and technological talent and dexterity of our Faculty informs and empowers individuals and groups to create, advance and prosper through technological, historical, and aesthetical research.

Expanded Cinematography® will study the topics related to the technical and the artistic future of motion picture, television, web, gaming, etc. to make prognoses of the technological and artistic trends of the ever emerging new industry, an industry that is totally immersed in an interconnected world.

We call for the unification of all concerned: colleagues, students and associates, for the artistic and technological advancement of imagery. We extend an invitation for dialogue and participation of all related industries.

Join us as we encourage innovation and continue this exciting evolution of our industry through Expanded Cinematography®.

Global Cinematography Institute Founders:

Vilmos Zsigmond, ASC
Chairman of the Board

Yuri Neyman, ASC
President