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LIGHT LAYERS™: FROM TECHNICAL LIGHTING TO SPATIAL IMAGE CONSTRUCTION

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Abstract. The article is devoted to the transition from technical lighting setup to the spatial construction of a photographic image within the four-layer Light Layers™ framework. The purpose of the study is to substantiate a layered sequence of building image depth, in which light is applied to the space of the scene before it is applied to the subject, and to assess the relative weight of each layer. In the course of the scientific study, general scientific methods of cognition were used, in particular analysis, synthesis, comparison, generalization, systematization and the relative importance index. The results of the study show that the photographic market has reached a state where technical equipment no longer separates one commercial offer from another. Statistical data on the growth of business costs, on the ratio of openings to closures and on the redistribution of face-to-face formats of client interaction across three business models were summarized. It was found that formats connected with showing and handing over a finished image are growing, whereas formats of checking and approval are declining. A three-year projection of the sale of a product during a personal meeting was calculated for the three business models, and it showed that the models diverge from more than a doubling of the volume to virtual stagnation. The technologies of technical light control were systematized, in particular light-shaping attachments, the colour rendering index and the colour quality scale, xenon and halogen sources, the quantitative measurement of light harshness through the proportions of a cast shadow, and multi-frame capture with subsequent assembly of the lighting in an editor. It was shown that all of them describe the source and not the scene. The stages of spatial construction of a two-dimensional image were revealed and combined into a single sequence, from the inventory of elements in the frame to the focal point. It was demonstrated that the same depth cues, namely overlapping planes, tonal separation and aerial perspective, are used both in landscape practice and in light field depth estimation. The author's Light Layers™ framework was substantiated, in which the image is built through four layers: atmosphere, space, shape and face. The layers were ranked by the relative importance index on four criteria, and it was established that the order of execution does not coincide with the order of weight. Space received the highest index, while the conventional technical setup on the subject received the lowest, despite being the easiest to teach. The practical significance of the study lies in the possibility of using its conclusions by photographers, studio owners and authors of educational programmes to rebuild the sequence of work with light and the sequence of teaching it.

Keywords: Light Layers, image depth, spatial construction, photographic lighting, relative importance index

Introduction

Professional photography has turned into a service industry where the cost of doing business rises faster than the price a client agrees to pay. An industry survey of 2025 records

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that 69% of client-based photographers, 71% of event and sport photographers and 66% of art and production photographers saw their costs grow over the previous year, and roughly 40% of the first two groups place that growth in the 6–10% band [11]. Only 30–37% of respondents raised their own prices by a comparable amount [11]. The margin narrows from both sides, and the person who has to close the gap is the photographer, not the manufacturer of the equipment.

Statistics on business survival point in the same direction. In the reference year of the industry survey, openings clearly exceeded closures in all three business models, with approximately 75 openings against 10 closures in the client-based model, 30 against 5 in the event-based model and 35 against 5 in the art-based model [11]. Carried across the 2024–2026 period, that ratio means the market is not shrinking. It is becoming denser, and a new studio enters a field where the client already holds dozens of visually similar offers.

Equipment has stopped being the thing that separates those offers. A mobile phone sensor measures roughly 5×4 mm against 36×24 mm in a full-frame camera and encodes about 1024 tonal values per pixel against 4096 to 16384 [3]. Its aperture collects two orders of magnitude less light, while the same device carries about two orders of magnitude more computing power [3]. Sensor materials move along the same curve, and vertically stacked perovskite photodetectors reach nearly twice the averaged external quantum efficiency of a conventional colour-filter array while reducing the colour reproduction error from 11.2 to 3.8 units on the CIELAB scale [10]. Event-based sensors add microsecond latency and high dynamic range on top of that [7]. A clean, correctly exposed, colour-accurate frame has become a default rather than an achievement.

What remains unsolved is depth. The quality of lighting is still described through luminous intensity, correlated colour temperature and the colour rendering index, and these standardized parameters do not capture perceptual properties such as the harshness of light or the visual comfort of a scene [9]. A photographer choosing a light-shaping attachment has no instrument that predicts how it will change the picture and relies on subjective experience [8]. Two frames taken with identical bodies, identical lenses and identical sources can still differ in that one reads as volumetric and the other as flat, and no technical parameter explains the difference. That difference is precisely what the client pays for, which is what forms the relevance of this study.

Literature Review

The question of the transition from technical lighting setup to the spatial construction of a photographic image is not sufficiently widely covered in the scientific literature. Nevertheless, separate components of this topic are considered by scientists.

In particular, the technical side of photographic lighting was studied by V. Štampfl and J. Ahtik [8; 9] and by I. Boyadzhiev, S. Paris and K. Bala [2]. The first two authors measured how light-shaping attachments alter the colour rendering of a scene, and later automated a method that converts the shape of a cast shadow into a numerical value of harshness [8; 9]. I. Boyadzhiev, S. Paris and K. Bala [2] described a workflow in which a scene is photographed several times from a fixed viewpoint with a moving light source, and the frames are afterwards combined into basis lights during editing.

As for the technologies of spatial image construction, this question was investigated by several authors. Among them it is worth highlighting X. Feng, Y. Ma and L. Gao [4], who proposed compact light field photography for single-shot three-dimensional imaging of texture-less scenes; S. Zhou, T. Zhu, K. Shi and co-authors [12], who reviewed light field technologies and systematized depth cues together with depth estimation methods; M. Delbracio, D. Kelly, M. S. Brown and P. Milanfar [3], who traced the development of mobile

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computational photography and described the synthetic depth of field that compensates for a fixed aperture.

The material base of image capture forms a separate group of works. S. Tsarev, D. Proniakova, X. Liu and co-authors [10] demonstrated monolithic vertically stacked perovskite colour photodetectors and compared their colour accuracy with colour-filter-array and Foveon architectures. H. Ren, Y. Jiang, T. Huang and X. Wu [7] surveyed representation learning for event cameras, which register pixel-wise brightness changes instead of full frames.

Expert and practical publications form the applied part of the topic. A. Livieri [6] proposed a four-step composition framework built around simplification, in which the number of elements in the frame, their internal complexity, the separation of the subject and the presence of a focal point are checked in sequence. G. Holpin [5] describes layering as the principal technique for returning depth to a two-dimensional image and treats foreground, middle ground and background as the working planes of a composition. Expert and statistical publications of the photographic industry were also used in the study [11].

Despite the existing developments, the two branches remain divided. The first quantifies light and depth as physical values, the second teaches composition as a set of rules, and neither offers a procedure that connects them. The author of this study for the first time compared the four layers of the Light Layers™ framework by a common set of criteria and calculated their relative importance, which shows in what order the layers should be built and why the conventional entry point through the subject yields the weakest contribution to depth. To achieve the goal, methods of analysis, synthesis, comparison, systematization and the relative importance index were used.

Problem statement

The purpose of the study is to substantiate the transition from technical lighting setup to the spatial construction of the image and to assess the relative weight of the layers that form its depth. To achieve the goal, the following tasks will be performed during the study: 1) characterize the trends of the photographic industry that make the question of image depth economically significant; 2) systematize the technologies of technical light control and their effect on the picture; 3) reveal the technologies and stages of spatial construction of a two-dimensional image; 4) substantiate the author's Light Layers™ framework and rank its layers by relative importance.

Methods and materials

The study is based on general scientific methods of cognition. Analysis was applied to statistical, scientific and expert sources, comparison served to confront the technical and the spatial approach to lighting, and systematization ordered technologies and stages into analytical tables and a scheme. The material consisted of peer-reviewed publications in the field of imaging and computational photography, expert publications of practising photographers, and an industry survey of the photographic market.

For the authorial assessment of the layers, the relative importance index was applied [1]. Each layer received scores on a five-point scale by four criteria: contribution to the perceived depth of the image, independence from studio equipment, reproducibility in teaching, and compatibility with computational processing. The scores were assigned by the author on the basis of the content of the analysed sources rather than collected from respondents, and the scale was read as a ladder of confirmation, where 5 corresponds to a property supported by the sources without reservation, 4 to a property limited by one condition, 3 to a partial or situational confirmation, 2 to a weak one and 1 to the absence of grounds. The index was calculated by the formula $RII = \Sigma W / (A \times N)$, where W are the scores by individual criteria, A is the highest score of the scale and N is the number of criteria. The

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values lie within the range from 0 to 1, and the closer a value stands to 1, the higher the relative importance of the layer.

Elements of novelty concern two positions. The author for the first time placed the four layers of the Light Layers™ framework and the conventional technical lighting setup on one measurement scale, which allowed the sequence of construction to be separated from the weight of each stage. In addition, the author calculated a three-year projection of the key indicator of client interaction for three business models, taking the growth rate recorded by the industry survey as the basis of the extension, since the source itself presents only a single year-on-year comparison.

Results and Discussion

The economics of a photographic business today is shaped less by the number of orders than by the cost of servicing each of them. According to the industry survey of 2025, costs grew for 69% of client-based respondents, 71% of event and sport respondents and 66% of art and production respondents, while a decrease was recorded by only 4%, 3% and 6% respectively [11]. About 40% of respondents in the first two models and 32% in the third placed the growth in the 6–10% band, and 30–37% raised their prices by the same amount [11]. The photographer absorbs the difference, and the single variable that stays under personal control is the value of the result itself.

The same survey shows where that value is generated. Face-to-face contact with the client is directly connected to revenue, and in the client-based model the annual revenue of those who hold personal meetings reaches about 1500 conventional units against 550 for those who do not, in the event and sport model 500 against 250, and in the art and production model 500 against 200 [11]. Individual formats of that contact, however, move in different directions. Viewing appointments grew by 20%, 13% and 6% across the three models, consultation lost 5% in the client-based model and 17% in art and production, and proofing fell by 2%, 6% and 40% respectively [11]. Only one format grows in all three models at once, namely the sale of a product during a personal meeting, and its rates of 33%, 18% and 2% make it the indicator worth projecting forward (see Fig. 1).

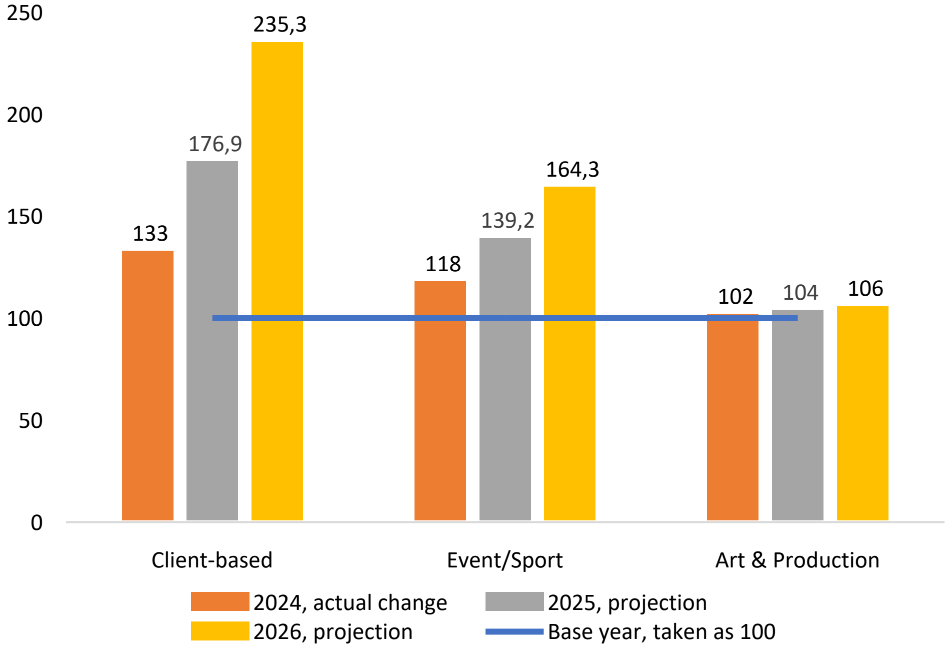

Fig. 1. Projected dynamics of product sales during face-to-face interaction with the client by photography business model, base year = 100

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Note: calculated by the author on the basis of the source [11]. The base year is taken as 100, the value for 2024 reflects the growth actually recorded by the survey, which amounts to 33%, 18% and 2% by model, and the values for 2025 and 2026 are obtained by extending the same annual rate of growth. Recommended form of presentation — a grouped column chart with three series by business model.

The projection separates the three models sharply. Over three years the client-based model more than doubles the volume of product sales at a personal meeting, the event and sport model grows by roughly two thirds, and the art and production model gains only six per cent and effectively stands still. The direction of the remaining formats is nevertheless consistent across all three. Formats in which the photographer shows and hands over a finished image grow, whereas formats in which the client only checks and approves fall, and proofing in the art and production model loses 40% of its volume [11]. Clients are ceasing to pay for participation in the process and are paying for a result they can see. This shifts the whole burden onto the visual quality of the frame.

A second signal sits in the same data. Photographers with less than ten years of experience include digital images in the package in 80% of cases against 58% among those with more than ten years, and their sales are dominated by digital files in a ratio of about 70 to 30, whereas experienced photographers keep the ratio near 57 to 43 with a larger share of printed products [11]. A print is examined at arm's length and in good light, and a flat picture does not survive that examination. For the studio owner this means that investment in the perceived depth of an image returns through the product line and not through the shooting fee.

The industry therefore rewards a visible difference in the picture rather than a difference in the equipment behind it. That difference begins with how light is controlled, and it is worth examining first what the current technologies of light control actually offer.

Light in professional photography has long been treated as an engineering parameter. The properties of a source are described by its type, correlated colour temperature, colour rendering index and the power with which it emits [8]. Natural light can be used as it is or reshaped by surfaces that either transmit the beam or reflect it, and artificial sources are added either alongside natural light or independently of it [8]. The moment a modifier is placed in front of the source, the calculation becomes unreliable. The manufacturer supplies the attachment, but the user has no tool that accurately predicts its influence on the colour of the original beam and deduces the outcome from personal experience [8].

The set of attachments used to reshape a beam is wide, and each of them changes the picture in its own way:

- grids restrict the distribution of light and produce focused directional illumination, which is applied when one plane of a scene has to be lit without spilling onto the neighbouring one [8];
- barndoors shape and direct the beam and give control over the boundary of the lit area [8];
- snoots compress the light into a narrow cone and build a dramatic accent on a limited part of the frame [8];
- softboxes diffuse and soften the beam, which makes them the standard solution in portrait and fashion work [8];
- reflectors bounce and redirect light into the shadows and even out the overall balance of illumination [8];
- gels alter the colour temperature of the source and add a colour effect to the image [8].

The measurable side of light quality develops faster than the perceptual one. The colour rendering index Ra is calculated as the arithmetic mean of measurements at the test points

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derived from the CIE 1974 colour samples, and it remains the key measure of how faithfully a source reproduces the natural colour of an object [8]. Evidence has nevertheless accumulated that Ra does not correspond to the perceived colour quality of many sources, particularly light-emitting diodes, and this drove the development of the Colour Quality Scale as an alternative that evaluates aspects of colour quality beyond rendering alone [8]. Xenon and halogen sources hold their position in this context precisely because they keep colour consistency and fidelity [8].

A newer development concerns the property that standard parameters miss. On the basis of the research of V. Štampfl and J. Ahtik, harshness refers to the spatial intensity distribution and the edge definition of the shadow cast by an illuminated object, and it is exactly this property that softboxes, beauty dishes, honeycomb grids, reflectors and diffusion panels are used to alter [9]. Until recently the performance of these attachments was evaluated qualitatively, and inconsistencies in the setup and the geometry of the scene made comparative studies difficult [9]. The method proposed by the authors segments the shadow by binary thresholding at all 256 levels, defines the breaking point between umbra and penumbra mathematically, and expresses harshness as the ratio of penumbra width to umbra height [9]. A property that used to be a matter of taste became a number.

A separate direction rethinks the moment at which light is decided. As shown by the study of I. Boyadzhiev, S. Paris and K. Bala, a workflow has emerged in architectural and commercial photography in which the photographer captures several frames from a fixed viewpoint with a moving light source, and the final lighting is assembled afterwards in an editor [2]. The purpose of the shoot changes, since it now produces useful data instead of a near-final image [2]. The authors group the input frames into basis lights that correspond to common photographic goals, in particular accentuating edges and curved regions, and add modifiers that soften highlights and shadows the way umbrellas and softboxes do physically [2]. Their experiments show that casual users benefit most, because coping with several tens of unorganized layers is daunting without experience [2].

To bring these solutions into one system, it is advisable to summarize them by their function in the picture (see Table 1).

Table 1 – Technologies of technical light control and their effect on the image

Technology	Essence and effect on the image
Light-shaping attachments [8]	Grids, barndoors, snoots, softboxes, reflectors and gels reshape the beam of the original source; each of them changes the distribution, the boundary or the colour of the light, while the result is deduced by the photographer from experience rather than predicted by a tool.
Colour temperature and colour rendering index [8]	The properties of a source are described by its type, correlated colour temperature and the index Ra, calculated as the mean of measurements at the test points of the CIE 1974 colour samples; Ra remains the key measure of faithful colour reproduction.
Colour Quality Scale [8]	An alternative scale developed because Ra does not match the perceived colour quality of many sources, particularly light-emitting diodes; it assesses aspects of colour quality that go beyond rendering alone.
Xenon and halogen sources [8]	Sources valued for their brightness and for holding colour consistency and fidelity, which keeps them in use where true-to-life colour reproduction is required.

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Technology	Essence and effect on the image
Quantitative measurement of harshness [9]	Harshness is defined through the spatial intensity distribution and the edge definition of a cast shadow; the shadow is segmented at all 256 threshold levels, the breaking point between umbra and penumbra is defined mathematically, and harshness is expressed as the ratio of penumbra width to umbra height.
Multi-frame lighting capture [2]	Several frames are taken from a fixed viewpoint with a moving light source, so the shoot yields data instead of a near-final image, and the lighting is assembled afterwards in an editor.
Basis lights and digital modifiers [2]	Input frames are combined into basis lights matched to common photographic goals such as accentuating edges and curved regions, while modifiers soften highlights and shadows in the way umbrellas and softboxes do physically.

Note: compiled by the author on the basis of sources [2; 8; 9].

As can be seen above from Table 1, every listed technology answers the same question, namely how to control the beam that falls on the subject. Colour, harshness and even the moment of decision have become measurable or postponable, yet all of them describe the source and not the scene. The picture is nevertheless perceived as a space, and the mechanisms of that perception belong to a different group of technologies.

A photograph loses depth for a physical reason. On the basis of the observations of G. Holpin, human vision is binocular and reads the world in three dimensions, and the moment that third dimension disappears, a beautiful view turns into a dull picture [5]. A photograph does not supply the differences between the two eyes that the brain normally uses to perceive distance [5]. Anything that returns a substitute for those cues makes the image pseudo-three-dimensional and holds attention longer [5].

The substitute is layering. As G. Holpin notes, foreground, middle ground and background elements composed together create a sense of three-dimensionality and draw the eye into and through the scene [5]. A strong foreground introduces the image and works through rocks, flowers, lead-in lines or texture [5]. The middle ground connects the foreground with the background and either supports the main subject or contains it, whether that is a lighthouse, a waterfall or a lone tree [5]. Overlapping elements such as receding hills communicate distance and scale, while tonal variation preserves contrast between shadow and highlight, which is particularly effective in low-angle golden-hour light that sculpts contours and textures [5].

A parallel framework approaches the same problem through reduction. On the basis of the study of A. Livieri, a composition is optimized by four sequential checks: how many elements are in the frame, keeping them at four or five at most; how internally complex each of those elements is, so that the relationships between them stay interesting; whether the main subject is separated from its surroundings and the elements separated from each other; and whether the primary visual element is the focus of the image [6]. Complexity is the input of this process and simplicity is the output [6]. Two independent practical frameworks thus converge on the same components, and this convergence allows them to be combined into a single sequence (see Fig. 2).

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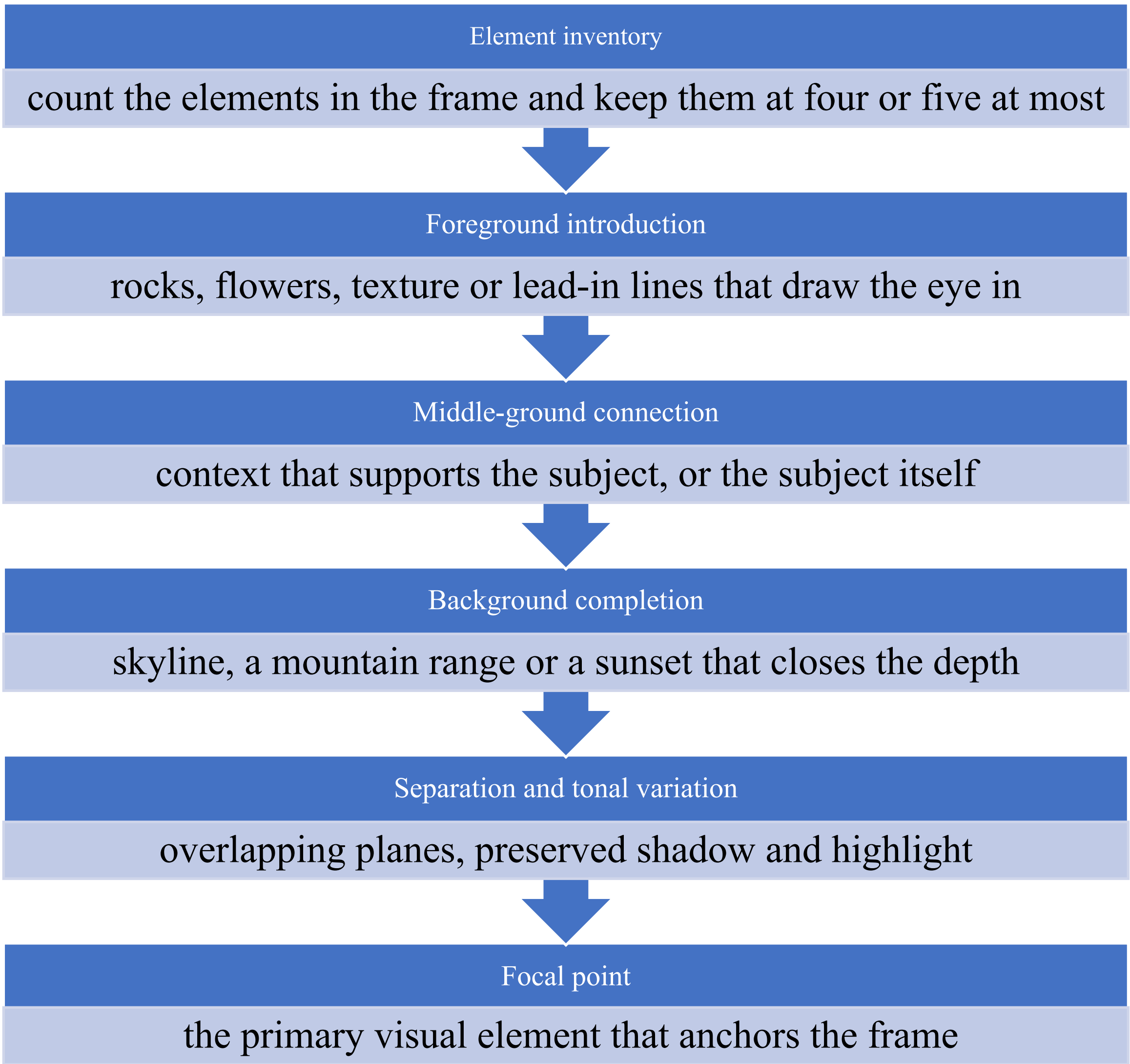

Fig. 2. Stages of spatial construction of a two-dimensional image

Note: compiled by the author on the basis of sources [5; 6]. Recommended form of presentation – a SmartArt process with six sequential steps.

The sequence moves from the whole scene towards a single point, which is the reverse of the order in which most photographers work. It also matches the way machine vision reconstructs depth.

Computational technologies operate on the same cues. On the basis of the review of S. Zhou, T. Zhu, K. Shi and co-authors, depth estimation from light field data relies on correspondence cues, defocus cues, binocular disparity, aerial perspective and motion parallax [12]. A light field records the spatio-angular information of rays and therefore contains enough of these cues for depth to be recovered [12]. Occlusion is handled by the same logic a person applies when moving slightly to see behind an obstacle [12]. Aerial perspective and overlapping, which practitioners describe as haze and receding planes, appear here as formal parameters of an algorithm.

The capture side has moved as well. As shown by the study of X. Feng, Y. Ma and L. Gao, compact light field photography samples dense light fields with sensors of arbitrary format, including a single pixel or a linear array, and retrieves a refocused image from a measurement dataset smaller than a single sub-aperture image [4]. The method synergizes multi-view with time-of-flight measurement and performs single-shot three-dimensional imaging of texture-

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less scenes over an extended depth range [4]. Multi-view methods reach depth accuracy below 100 µm at near distances, yet their accuracy degrades quadratically with distance and they depend heavily on object texture for effective depth extraction [4]. Depth, in other words, is captured most reliably where the scene itself is structured.

Mobile devices reach the same goal by computation. On the basis of the research of M. Delbracio, D. Kelly, M. S. Brown and P. Milanfar, the small fixed aperture of a phone camera produces almost no optical depth-of-field blur, so manufacturers substitute a synthetic blur known as digital bokeh [3]. The modern pipeline captures a burst of frames, aligns them, merges them and only afterwards enhances the result [3]. Separation of the subject from the background, which a photographer achieves optically, is here reconstructed from data. The mechanism differs and the visual goal is identical.

Both branches, the practical and the computational, treat the image as a set of planes rather than as a lit object. This is the principle on which the author's framework rests.

Most existing approaches to light begin with the illumination of the person. Light Layers™ reverses that order and treats the frame as four layers built in sequence, where each layer performs its own function and reinforces the work of the next. The framework replaces the question of where to place the light with a different one, namely which layer of the image is not working and why the frame lacks depth. The layers are formed as follows:

- atmosphere – sun rays, water reflections, light haze, dust, leaves in front of the lens, flare, fog and light passing through airborne particles; the layer creates the sensation of depth and of a natural environment before the main subject appears;
- space – architecture, trees, sand, rocks, water, natural or urban surroundings; the background stops being decoration and becomes a full part of the image, and the scene acquires volume;
- shape – backlight, side light, sunlight, natural reflections, work with the silhouette and with the texture of hair and clothing; the layer separates the person from the surroundings without severing the connection with them;
- face – natural skin colour, expressiveness of the gaze, volume of the face and soft controlled illumination; only at this point does attention move onto the person and the frame receives its emotional centre.

Each layer is executed in that order, but the order of execution says nothing about the weight of a layer in the final result. To separate these two things, the layers were assessed by four criteria and their relative importance was calculated, with the conventional technical setup on the subject added as a point of comparison.

The scores in this assessment belong to the author of the study and are not the outcome of a survey of respondents. Each of them is derived from the content of the sources cited beside the layer in the table, and the five-point scale is read as a ladder of confirmation. A layer receives 5 on a criterion when the sources support the property directly and without reservation, 4 when the property holds but one condition limits it, 3 when it holds only partially or depends on circumstances, 2 when it appears weakly, and 1 when the material gives no ground for it. Space, for instance, receives 5 on independence from equipment because architecture, trees, water and rocks are already present in the scene and require nothing to be bought, whereas the technical setup receives 2 on the same criterion because it presupposes sources and modifiers. The scale is therefore ordinal and expresses relative significance rather than a measured physical quantity.

Reading the scores this way keeps the assessment checkable. Every value can be traced back to the reference standing next to the layer, and a reviewer who disagrees with a score can name the source that contradicts it. The results of the calculation are presented below (see Table 2).

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Table 2 - Layers of the Light Layers™ framework and their authorial index of relative importance

Layer	C1: depth	C2: autonomy	C3: teaching	C4: compute	RII	Level
Space, layer 2 [5; 6]	5	5	5	4	0.95	Critical
Shape, layer 3 [2; 9]	4	4	4	5	0.85	High
Atmosphere, layer 1 [5; 12]	5	5	3	3	0.80	High
Face, layer 4 [8; 10]	2	3	4	5	0.70	Medium-high
Technical setup on the subject [8]	2	2	5	4	0.65	Medium-high

Note: compiled by the author on the basis of sources [2; 5; 6; 8; 9; 10; 12]. The scores were assigned by the author of this study according to the five-point scale described above, where 5 marks a property confirmed by the sources without reservation and 1 marks a property for which the material gives no ground. The criteria are C1 — contribution to the perceived depth of the image, C2 — independence from studio equipment, C3 — reproducibility in teaching, C4 — compatibility with computational processing. The index was calculated by the formula $RII = \Sigma W / (A \times N)$, where $A = 5$ and $N = 4$ [1].

As can be seen above from Table 2, the layers of the framework carry unequal weight in building depth, and the highest index belongs to space (RII = 0.95). This layer alone reaches the maximum on three criteria at once. It contributes most to perceived depth, because foreground, middle ground and background are the direct substitute for the binocular cues a photograph loses [5]. It demands no equipment, since architecture, trees, water and rocks are already present in the scene [5]. And it is fully teachable, because both practical frameworks describe it as a finite sequence of checks [5; 6]. It loses a single point only on computational compatibility, since depth estimation from a light field still degrades with distance and depends on the texture of the scene [4].

Shape (RII = 0.85) is the only layer that reaches the maximum on computational compatibility. Its material is the geometry of shadow, and shadow is exactly what has become measurable, since harshness is now expressed through the proportion of penumbra to umbra and the lighting itself can be assembled after the shoot from a set of captured frames [2; 9]. Its lower scores on the other three criteria have a different cause. Separation of the silhouette adds volume but does not create the space in which that volume exists, and backlight depends either on the position of the sun or on an additional source.

Atmosphere (RII = 0.80) is the case where two maximum scores are cancelled by two low ones. Haze, flare, dust and light through airborne particles reproduce aerial perspective, which functions as a formal depth cue in light field theory and as a practical device in landscape work [5; 12]. They cost nothing and require no equipment. They cannot be commanded, however, since fog either appears or does not, and a procedure that depends on weather is hard to teach and hard for an algorithm to model. The layer is powerful and unreliable at the same time, and the index records precisely that combination.

The two lowest positions are the most instructive. Face (RII = 0.70) scores the maximum on computational compatibility, because skin tone and colour fidelity form the best-instrumented part of the whole chain, where colour rendering is measured through Ra and the colour quality scale, and new stacked sensors bring the colour reproduction error down to 3.8

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units on the CIELAB scale [8; 10]. Its contribution to depth is nonetheless minimal, since the face is what depth is built around and not what builds it. The conventional technical setup on the subject falls lower still (RII = 0.65) despite the maximum score on teachability. Lighting schemes are the most formalized part of photographic education and the easiest to reproduce, and this is the reason they are taught first. The index shows that ease of teaching has been mistaken for importance.

The gap between the order of execution and the order of weight is the substance of the framework. Atmosphere, space, shape and face are performed in that sequence because each layer physically prepares the next: haze has to be found before the space is arranged, the space has to exist before a silhouette can be separated from it, and the silhouette has to be separated before the face can be modelled without flattening the scene. The ranking by weight, however, places space first and the technical setup last. A photographer who starts where the manuals start begins with the element that contributes least to the property the client actually pays for. Reversing the entry point is therefore not a matter of taste but a correction of sequence.

The proposed ordering is open to objection, and the sources themselves supply it. A. Livieri warns directly that his framework is not a magic formula and works as a visual structure rather than a rule [6]. G. Holpin holds the opposite position and teaches composition as the first topic of every course, treating it as the fastest route to better images with any camera [5]. V. Štampfl and J. Ahtik occupy a third pole and argue that the evaluation of lighting performance has remained largely qualitative, which is exactly why it needs a reproducible, quantitative and scalable method [9]. The disagreement concerns not whether depth matters but whether the way it is built can be formalized at all. The index calculated above takes the side of formalization and accepts its cost, since the scores are analytical judgments of the author and the formula is honest exactly to the degree that the scores entering it are honest.

One limitation should be stated plainly. The assessment covers the layers of a single framework together with the conventional alternative to it, and it was made on the basis of published sources rather than a survey of practising photographers. The indices therefore show relative weight inside this framework and are not a measurement of how photographers really distribute their attention. Verification on a sample of practitioners remains a separate task.

Conclusions

The photographic market has entered a phase where equipment no longer distinguishes one offer from another, while the cost of running a business grows faster than prices. Two thirds of respondents in every business model report rising costs, and the formats of client contact are redistributing towards showing and handing over a finished product and away from checking it, with proofing in the art and production segment losing two fifths of its volume. The technical foundation has been levelled at the same time, since a phone sensor a fraction the size of a full-frame one compensates for its physics through computation, and colour accuracy has turned into a manufactured property of the sensor rather than a skill. The photographer, who is the figure that has to act here, is left with the only variable equipment does not supply, namely how the picture is built.

Technical control of light has meanwhile become genuinely measurable. The character of a beam is described through colour temperature and rendering indices, its harshness converts into a number derived from the proportions of a cast shadow, and the decision about lighting can be moved out of the shoot and into editing through multi-frame capture. All of this describes the source and the subject it falls on. Depth belongs to a different mechanism, and both landscape practice and light field research point to the same one, since the eye reads distance from planes, overlapping, tonal separation and aerial perspective. The frame therefore has to be constructed before it is lit, and a practical consequence follows for anyone who

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teaches photography: a course should open with the arrangement of the scene and reach the lighting scheme afterwards.

Ranking the layers produced a result that does not coincide with the order in which they are performed. Space received the highest index, because it alone combines the largest contribution to depth with full independence from equipment and complete teachability. Shape follows, since the geometry of shadow is both the material of volume and the part of the process that computation has already captured. Atmosphere holds third place not for want of effect but because it cannot be commanded. Face and the conventional setup on the subject close the list, and the second of them earns the maximum for ease of teaching while contributing least to depth, which explains how it became the standard entry point of photographic education. Since the assessment rests on published sources and on the analytical judgment of the author rather than on a survey of practitioners, it describes the internal weights of the framework and awaits verification on real practice. Within those limits it supports a single recommendation for the photographer: build the space first and light the face last.

References

1. Boakye, M., Adanu, S. K., Adu-Gyamfi, C., Asare, R. K., Asantewaa-Tannor, P., Ayimah, J. C., & Agbosu, W. K. (2023). A relative importance index approach to on-site building construction workers' perception of occupational hazards assessment. La Medicina del Lavoro, 114(3), e2023024. https://doi.org/10.23749/mdl.v114i3.14240
2. Boyadzhiev, I., Paris, S., & Bala, K. (2013). User-assisted image compositing for photographic lighting. ACM Transactions on Graphics, 32(4). https://www.cs.cornell.edu/projects/light_compositing/
3. Delbracio, M., Kelly, D., Brown, M. S., & Milanfar, P. (2021). Mobile computational photography: A tour. arXiv. https://arxiv.org/abs/2102.09000
4. Feng, X., Ma, Y., & Gao, L. (2022). Compact light field photography towards versatile three-dimensional vision. Nature Communications, 13, Article 3333. https://doi.org/10.1038/s41467-022-31087-9
5. Holpin, G. (2025). Composition rules in depth: Use layers to build depth. https://www.garyholpin.co.uk/post/composition-rules-in-depth-use-layers
6. Livieri, A. (2021). A simple four-step framework for better landscape photo compositions. PetaPixel. https://petapixel.com/2021/04/27/a-simple-four-step-framework-for-better-landscape-photo-compositions/
7. Ren, H., Jiang, Y., Huang, T., & Wu, X. (2026). A systematic survey on event camera representation learning. arXiv. https://arxiv.org/abs/2606.23078
8. Štampfl, V., & Ahtik, J. (2024). Quality of colour rendering in photographic scenes illuminated by light sources with light-shaping attachments. Applied Sciences, 14(5), 1814. https://doi.org/10.3390/app14051814
9. Štampfl, V., & Ahtik, J. (2026). Quantifying light harshness: Method automation and influence of photographic light modifiers. Journal of Imaging, 12(4), 148. https://doi.org/10.3390/jimaging12040148
10. Tsarev, S., Proniakova, D., Liu, X., Wu, E., Matt, G. J., Sakhatskyi, K., Ferraresi, L. L. A., Kothandaraman, R., Fu, F., Shorubalko, I., Yakunin, S., & Kovalenko, M. V. (2025). Vertically stacked monolithic perovskite colour photodetectors. Nature, 642, 592–598. https://doi.org/10.1038/s41586-025-09062-3
11. Zenfolio. (2025). The 2025 state of the photography industry survey: Report overview. https://zenfolio.com/blog/state-of-the-photography-industry-2025/
12. Zhou, S., Zhu, T., Shi, K., Li, Y., Zheng, W., & Yong, J. (2021). Review of light field technologies. Visual Computing for Industry, Biomedicine, and Art, 4, Article 29. https://doi.org/10.1186/s42492-021-00096-8

ISSN: 2787-9364

13. Shumilina, L. (2026). TOOLS FOR REDUCING OPERATIONAL RISKS IN CORPORATE SAAS PLATFORMS. Modern Engineering and Innovative Technologies, 4(44-04), 58–73. https://doi.org/10.30890/2567-5273.2026-44-04-021

14. Lavrik, N. (2026). Preventing corporate fraud with automated financial controls. Modern Engineering and Innovative Technologies, 4(44-04), 29–40. https://doi.org/10.30890/2567-5273.2026-44-04-014

15. Telebenieva, Y. (2024). Development perspectives and innovative areas of artificial intelligence application in marketing and pr. Economics and Education, 9(2), 26-31. https://doi.org/10.30525/2500-946X/2024-2-4

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