

Applications of Visual / Optical Perspective						Copyright © (2025) Alan Stuart Radley
Specialised and cross-disciplinary solutions						
Discipline	View	Match	Represent	Illusion	Immersion	
Anatomy / Medicine	Medical Imaging, CT, MRI, CAT scan, X-RAY, Electron, Nuclear Imaging, PET, Ultra-Sound Imaging.	Kinaesthetic Modelling, Replacement joints/limbs, Paediatrics, Oncology, Ophthalmology, AI.	Medical Illustration, Brain Imaging, Radiology, Medical Education, Robotic Surgery Training.	Viewing Body's Internal Structures (real-time), Cardiology, Radiation Therapy, Gastroenterology.	Stereography and VR/AR, AR Operations, 3-D Printers, 3-D Remote Surgery, AI, Micro and Key-hole Surgery.	
Archaeology / Natural Sciences	Remote Sensing (Active, Passive, Microwave)	Photogrammetry, Metrology, Surveying, AI.	NeRF, LIDAR. Topography, Sedimentary Maps.	RADAR, VR Imaging, GNSS, IMU, Earth Maps.	Built Environment VR, AR, XR, MR Surveying. AI.	
Architecture and Environment	Buildings, Columns, Fountains, Gardens, Environment	CAD Models, Multi-Modal Building Simulations, AI.	Idealised Buildings, Interiors, Furniture.	Future Building VR for Building Reality Experience.	Environment walk throughs. Lighting Simulations, AI.	
Astronomy	Telescopes - Ground and Space; optical, gravity, particle.	Survey Telescopes, Universe Modelling, Star Atlas, AI.	Astronomical Seasons, Planetary Orbits, Eclipses.	Star Atlas (virtual), Solar System Fly-throughs.	Planetarium IMAX, Sphere Theatre.	
Artistic Subjects	2-D & 3-D Art, Drawing, Painting, Sculpture, Installations.	Modelling (various types), Light shows, Visibility Maps, Large scale installations.	Intarsia, Letters, Marquetry, Polyhedra, Proportion, Symmetry, Quadratura.	Light and light-scapes, Lumia, Stage Lighting, Projection Mapping, AI.	Sphere and IMAX Theatres, Drone Light Displays, Fireworks, Stage Lighting.	
Cinema	2-D Cinema, Large Format, High Frame Rate (HFR), Time-elapsed views of Earth.	3D Photogrammetry, Digital Filmmaking, Virtual Production.	Motion Capture, Blending of Practical and CGI Characters/Topics.	Digital Filmmaking, Virtual Production, SFX, Widescreen, Practical Effects,.	Stereographic Cinema, Virtual Production, Volume Screens.	
Computer	Artificial Intelligence (Generative Images). Hypergrams (BAEM images).	Artificial Intelligence (Computer Vision), GIS, GPS, AI.	Computer Graphics, CGI, Animation, SFX, CAD. Layering of world views.	3-D, Volume and Holographic Displays. 3-D Simulations.	Digital Metaverse, VR, AR, MR, ER. Digital Multiverse, AI.	
Cosmograms / Information Visualisation	Cosmograms. Visual relationships. Global viewpoint + Focus.	World Trees/Types, Data Spatialisation, Anthropocene, Biosphere.	False perspective for realism, Multi-View/ Multi-Time Perspectives.	Social, Cultural Modelling. Ecological relations. Literal / Visual Linkages.	VR / AR Information Visualisation. Tree of Life. Cognitive Media Stack.	
Crystals / Gems / Symmetry	Natural Crystals, Gemstone Optics.	Symmetry Modelling (atomic, molecular, facets)	Microstructure modelling. Modal Structures.	Gemstone Simulation. Light scattering, dispersion.	Atomic / Sub-atomic Structures.	
Drones	Aerial / Sky Photography, Aerial / Sky Movies.	Photogrammetry, Metrology, Surveying.	Panoramic Views, 360-Degree Spherical Views.	Bird's Eye Views, Panoramic Fly-Throughs.	Virtual Reality Trips, Panorama / Volume Displays.	
Education / Research	Perspective for Visualisation (many topics).	Perspective for Modelling. Perspective vs. Perception.	Perspective for Visualisation / Representation.	VR, AR, MR, XR. Limits of Visual Perception.	Virtual Reality, Problem / Solution.	
Engineering Drawing and Design	Technical Drawing, and Design Drawing. Descriptive Geometry.	Machine drawing: Plan, Elevation, Axonometric, etc. AI.	CAD Systems, Mechanical & Optical. Physics + optical models.	VR, AR, XR, AI. Design fly-throughs. Human scale experience.	Virtual Reality, AI. Artificial Intelligence (viewpoint generation).	
Entertainment	Visual, Graphical, Instrument illusion(s).	Ray Tracing, Holograms. VR and AR Glasses.	3-D Animation, Computer Games, SFX, CGI.	Transparent views, Holograms. Light shows.	Projection Mapping. Pepper's Ghost, etc.	
Extended Reality	Virtual Reality	Augmented Reality, AI.	Virtual Reality	Augmented / Mixed Reality	Mixed Reality, AI.	
Geography	Cartography / Maps (Multi-layer / Multi-mode).	Photogrammetry. Google Maps, AI.	Topography (scanning/ modelling of topography).	VR, AR, MR, XR. Printed / Physical Models.	Spherical Displays. Volume Displays.	
Geometry	Analytic Geometry	Descriptive Geometry	Projective Geometry	VR, AR, MR, XR.	VR, AR, MR, XR.	
Measurement / Measuring Systems	Compass (trigonometry, sector, reduction), Perspective Box/Window. Sextant, optical gauges.	Ruler, calliper, protractor, gauge, dial, slide-rule, nautical slide rule, airplane slide-rule, quadrant etc.	Pantograph, planisphere, planetarium, theodolite, astrolabe, orary, planetary globes, cosmolabe.	Head-up Displays, Car Dashboard Projections. 3-D Printing, Scale Models, Holographic Printers.	Grand Scale of Earth/ Universe - Planetarium IMAX, Sphere Theatre, Perspective Window(s),	
Microscopy	Optical, Electron, Particle, Atomic Force Microscopes.	Optical, Scanning Microscopes.	Artificial Intelligence image characterisation.	Digital Imaging, Multi-Scale, VR Images, Micro-Maps.	Sphere Theatre Visualisation.	
Nature / Life Sciences	Invisible Worlds, Fractals. Nano, Micro, Macro Worlds/ Structures/Abstractions.	Panoramas, Ballon Images. Mountain-scapes, City-scapes, Earth from air/ space.	Shape Grammars, Phyllotaxis, Computer Vision, Environmental Monitoring.	Rainbows, Undersea World, Heavenly Vault, Mirage, Aurora, Camera Obscura.	Spherical Displays. Volume Displays. IMAX / Sphere Theatre.	
Optics	<b>Capture:</b> Lens, mirror, glasses, telescope + camera (multiple types), binoculars, Meta-Lens for 3-D images.	<b>Projection:</b> zoetrope, kinoscope, magic lantern, projector, light-field optics, Hypergrams, etc	<b>Display:</b> TV/Cinema/Games. Explore: Hypergrams for image: querying / sequencing / exploration.	Stereoscope, holograms, kaleidoscope, catadioptric cistula, camera obscura & lucidia, Magnifiers etc.	Internal / External Object VR. Hyperspectral analysis, Macro/Micro/Nano Structures, Holographic Imaging.	
Photography	Film, Digital - 2-D. Polarisation views/scenes.	Hypergrams. Spectral analysis.	Expand Field of Vision. 360 Degree Cameras/ Displays.	Film, Digital - 3-D Images. Expand Field of Vision.	Curvilinear, 360 degree spherical methods.	
Science / Mathematics	Visualisation/simulation, Atomic & Sub-Atomic.	Mechanistic World - Material Analysis.	Chemistry, Compounds, Proteins. Micro-structures.	Horizontal/Vertical Causality. Scientific vs. Platonic World.	Mechanics, Sonar. Gravity vs Quantum.	
Shapes and Shadows	Sundials, gnomon, etc. 3-D shape, stereo-vision.	Size, Scale, Distance determination.	Solar modelling of building temperature.	Computer games & CGI - accurate raytracing.	Sphere Theatre - perspective illusions.	
Sociology	Origins of Perspective	Inner vs Actual Space	Graphical vs. Actual Space	Scientific vs. Cultural Space	Microcosm / Macrocosm	
Space (Outer)	Environmental Monitoring.	Orbital Dynamics.	GIS, GPS, Space Flight.	Star Charts (virtual).	Large Scale Modelling.	
Technology	Computer Vision, Information Visualisation.	Robotics, Sight Enhancement. Computer Vision, AI.	Engineering, chip manufacturing.	Internet of Things, CGI. Lighting, Visibility models.	Digital Metaverse, VR, AR, MR, ER, AI.	
Theatre / Scenography	Theatre backgrounds. Viewpoint modelling.	False sense of place. Wayfinding, Imaginary Scene.	Forced Perspective. Journey representation.	Perspective Illusions in Theatre or real scene.	IMAX / Sphere Theatre with Live Performance.	
Television	2-D Television	Live Streaming of Events.	Digital Overlays (CGI).	3-D Television, Holograms.	Spherical Displays	
Vision	Human & Animal Vision - types, mechanisms.	Systemised Spaces - Gunsights, Binoculars, Telescopes.	Perspective for looking at Internal/External Structures	Computer Games - First and Third-Person Perspectives.	AR, VR, XR Systems, (Oculus, Apple Vision), AI.	