

## **Styles and degrees of 3D Dimensionalization:**

A framework for understanding the directorial control offered by Dimensionalization of 2D into 3D films

*Authored by Matt DeJohn, Keith Nelson, David Seigle and the Artists at In-Three*



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Dimensionalization®, the process of creating a 3D image from a 2D image, provides film directors with a level of artistic control that is generally not obtainable using stereo cinematography or automated techniques such as those using motion detection. (Why this is true is explained in the paper “Stereographic Geometry of 3D Representations.”)

At In-Three™, when we work with a client to convert films to 3D we think in terms of the “style” and the “degree” of Dimensionalization required for each scene. This helps us work together to determine the way we will use our Dimensionalization tools to create the desired dramatic impact, at an appropriate cost, and in an acceptable time frame.

This paper has been created for directors; its purpose is to explain how dimensional style and degree can be exercised to achieve nuanced dramatic effect scene to scene.

### **Style of Dimensionalization: “Positive” or “Negative”**

In the following discussion examples are given to illuminate the ideas being discussed. It is important to remember, however, that specific suggestions as to the style and degree of dimensionalization appropriate for any specific scene are only suggestions. There is usually no one “right” way to do it. The choice is ultimately the director’s to make.

### **Positive and Negative shifts and their effect**

By “style” of Dimensionalization we mean the shift in objects’ placement in the right frame of a right/left pair to create the stereo effect. A shift in object

placement relates to the variable “img” defined in the above referenced paper. A “positive” shift of an object in the right frame relative to its placement in the left frame shifts the perceived depth beyond the screen. A “negative” shift in the right frame creates the perception that the object is closer to the viewer than is the screen.

When we refer to “Positive/Negative” style below we mean a combination of positive and negative object shifting.

### **Positive Dimensionalization**

There are numerous types of shots we would recommend for positive shift Dimensionalization. In a film that is Dimensionalized® in the positive style the action will appear to occur beyond the screen, with the screen acting as a window to the scene.

		Style of Dimensionalization	
		Positive	Positive and Negative
Degree of Dimensionalization	Detailed	<ul style="list-style-type: none"> <li>• Movie screen acts as a window to the world.</li> <li>• Most elements in a shot are given distinct depth.</li> </ul>	<ul style="list-style-type: none"> <li>• Depth is immersive, extending into the theater in addition to beyond the screen.</li> <li>• Most elements in a shot are given distinct depth.</li> </ul>
	Focused	<ul style="list-style-type: none"> <li>• Movie screen acts as a window to the world.</li> <li>• Only objects in the viewer's focus of attention are given distinct depth shape and perspective, building on the inherent depth cues present in the shot.</li> </ul>	<ul style="list-style-type: none"> <li>• Depth is immersive, extending into the theater in addition to beyond the screen.</li> <li>• Only objects in the viewer's focus of attention are given distinct depth shape and perspective, building on the inherent depth cues present in the shot.</li> </ul>

This style is appropriate for shots that move quickly, in which case, a more positive style lends itself to easier viewing. This is so because fast action in a scene with a high degree of relative depth may require rapid viewer refocusing between objects. Positive Dimensionalization will alleviate this concern. Examples of this are the fight between T-Rex and King Kong in “King Kong” and the Batmobile chase scene from “Batman Begins”.

Distant elements or large objects can also benefit from positive shift because the result more closely approximates actual size. This is the case with the scene of the Star Destroyer traveling through space from “Star Wars”, and the long helicopter shot from “The Sound of Music”.

**Positive/Negative Dimensionalization**

Likewise, there are shots appropriate for a Positive/Negative style. In a film Dimensionalized using this style the action will appear to be occurring in a world that ranges from close to the viewer on toward infinity. This typically provides a more immersive experience.

This style of Dimensionalization works well when objects move past the camera, such as debris from an explosion;

it will place the viewer “in the action”. Examples of this are the elevator exploding outward in the “Matrix” and the arrows falling on the Scots in “Braveheart”.

We also recommend this style for shots where the actual depth of the scene lends itself to a wide range of perceivable depth. Examples of this would be looking down the side of the Empire State Building and numerous establishing shots from “Lord of the Rings”.

**Degree of Dimensionalization: “Detailed” or “Focused”**

When we speak of “degree” of Dimensionalization we refer to the relative number of objects given explicit depth value.

**Detailed Dimensionalization**

“Detailed” Dimensionalization allows the viewer to look most places in the shot and perceive relative depth between objects. That is, most objects in the shot are given explicit depth. Detailed Dimensionalization can be very effective in creating dramatic impact, but it is typically necessary or appropriate for a minority of shots in a film.



IN3D software tools allow an artist to fashion proper shape for each object and to alter an object’s perspective to produce a realistic alternate eye view. Once key framing is complete the clip can be dimensionalized.

A wide depth of field can benefit from Detailed Dimensionalization because every element in the shot is well defined. Many scenes from “Citizen Kane” represent compelling opportunities to use detailed dimensionalization as do many shots from “Miami Vice”.

Generally any longer-than-average shot with a wide depth of field is appropriate for this degree of Dimensionalization since the viewer has time to scan the frame and savor its content. Good examples of this are many of the extended shots from “Children of Men” or the desert scenes from “Lawrence of Arabia”.

### Focused Dimensionalization

With focused Dimensionalization we give depth to those objects that draw the viewer’s attention; elsewhere we maintain the director’s natural depth cues. We have found that focused style is appropriate for a majority of shots in most films.

For shots that have a shallow depth of field, focused Dimensionalization tends to reinforce the director’s intent of focusing the viewers’ attention. An example of this is the grand staircase scene from “Titanic”, the café scene from King Kong or Rhett’s abandonment scene from “Gone with the Wind”.

Dialogue scenes (such as Rick talking to Captain Renault at the end of “Casablanca”) rarely need more than Focused Dimensionalization because the setting tends to play a secondary role to the drama of the scene.

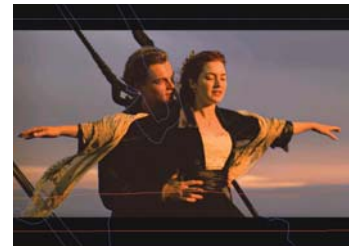
Also, with their limited viewing time, highly kinetic shots and shorter than average shots usually only require focused Dimensionalization. Good examples are actions scenes from “Speed” and scenes of the battle for Omaha Beach from “Saving Private Ryan”.

We at In-Three like to point out that there can be various “right” style or degree choices. The question of which is proper is an artistic choice; how a director chooses relates to the dramatic effect he wishes to achieve.

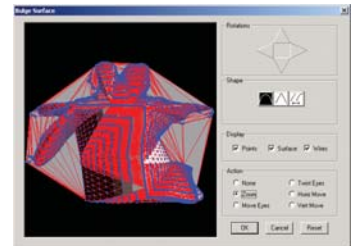
In-Three’s patented process and the software tools that make conversion practical, (i.e., IN3D™ – the In-Three Depth-builder suite of tools) make choosing the style and degree of Dimensionalization a simple artistic choice for a director and a practical choice for a producer.

### Call us today

For a complete demonstration of the styles and degrees of Dimensionalization available for your project call Damian Wader at 805-413-7580.



Each selected frame is fully dimensionalized, that is, all objects to be moved forward from the screen or back beyond the screen are outlined and moved so as to achieve the desired dramatic impact.



During dimensionalization IN3D software maintains consistency and continuity between frames to carry forward the established depth, shape, and perspective values throughout the clip.

# In-Three™

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