Generative Theory: **Apply the three lenses — analytical, critical and constructive — to deconstruct and reconstruct the "fill color" command from Google Slides.**

Lenses:	Analytical Lens		Critical Lens		Constructive Lens
Principle:	Exists?	Does the "fill color" command illustrate this principle?	+/– ?	Use the principles to critique the "fill color" command	Create an instrument & substrate. Show their use of the principles
Reification of a **command** (input)	N	Does not transform a command into a persistent, interactive instrument. Must choose icon from a menu, no persistent instrument.	+	Could transform the icon into an instrument that applies color to mulitple objects	Create a "fill color" brush-like instrument that can pick up colors from objects or a color wheel and drop the color on other objects and to a palette that preserves previous color choices
			–	Slow, multi-step process that requires choosing the fill color every time	
Reification of an **effect** (output)	N	Does not transform effects into a persistent, interactive substrate that contains objects, interprets objects and manages relationships among objects: does not retain persistent color relationships.	+	Could create a set of color relationships between objects and semantics	Create an interactive color palette that preserves links between objects and the color swatches in the color palette
			–	Cannot establish persistent relationships between color choices and objects	
Polymorphism of a **command** (input)	Y	Limited polymorphism: does not enable an instrument to affect different types of objects, beyond different shapes	+	Affects different types of shapes, e.g., text, and other object aspects, e.g., outlines	Create a brush that picks up and applies color to different types of objects, including text, shape outlines etc.
			–	Only fills shapes with color	
Polymorphism of an **effect** (output)	N	Does not enable a substrate to manage different types of relationships: applies only to color	+	Could apply different color-related properties, such as transparency	Create brush that applies diverse properties associated with color, such as hue, brightness and transparency
			–	Affects only fill color. Could affect other color-related properties.	
Reuse of a **command** (input)	N	Does not apply previous actions to different objects: cannot reuse a color or sequences of color choices	+	Would be useful to reuse colors or color sets	Create an interactive color palette that keeps track of a set of color choices, with the ability to reorder, add, modify and delete them
			–	Must reselect color from menu each time.	
Reuse of an **effect** (output)	N	Does not apply previous effects to different objects: cannot reuse color choices	+	Would be useful to establish relationships between colors or between colors and objects	Create a color palette that preserves relationships between objects and named colors, e.g., primary, secondary
			–	Does not have any concept of "color relationships"	
Feedforward a **command**	N	Command is visible as an icon in the toolbar.	+	Current color is displayed under the toolbar icon, showing the color used when simply clicking the icon	An embedded tool could be attached to the object and visible when selecting the object would save round trips to the toolbar
			–	Toolbar icon only visible when an object is selected	
Feedforward an **effect**	N	Cannot see the effect of the command until it is applied	+	Could hover over a color swatch to see the effect on the selected object	User hovers over color palette to see an ordered set of color choices and which objects have that color
			–	Cannot see effect of command	
Feedback a **command**	N	Command is applied with a single click. No feedback.	+	Dragging the mouse out of the object and back in could show the previous color for comparison	An in-hand tool that shows the previous colors of an object when hovering over it
			–	No feedback	
Feedback an **effect**	N	The relationship between the applied color and the colors of other objects is not shown	+	Could highlight the other objects of the same color	An embedded tool could show the set of previous colors applied to the object
			–	No feedback	
Specialize a **command (currying)**	N	Does not let users create instruments or transform properties into families of tools: users cannot create new brushes	+	Could "curry" properties to create customized brushes	Create a set of cutomized brushes that include color and other color-related properties, with the ability to adjust after the fact
			–	Cannot create customized color tools	
Specialize an effect **(templating)**	Y	A color palette can be seen as a template: a set of predefined color set by the user.	+	More sophisticated "color templates" could be created that make the relationships among colors explicit	Create a "color scheme" by specifying the relationships among the colors in a palette, such as complementary, triad, ...
			–	Can only create color swatches	
Adjust a **command (tuning)**	N	Does not let users fine-tune the parameters of the command to adjust the color or transparency	+	Could capture variation in pressure to map to variations in hue, transparency, etc.	Capture user gestures to map scrollwheel to hue, left-right movements to saturation, up-down movements to value
			–	No possibility to adjust the color while applying it	
Adjust an effect **(tweaking)**	N	Does not let users make a local adjustment to the color/transparency (must apply a new color)	+	Could correct a color hue/transparency after it's applied rather than apply a new one	Use the same gestures as for tuning but with a tweaking tool, so the same change would be applied if a different color were assigned to the object
			–	No possibility for adjust the color after having applied it	