

Technology 03

Animation

Vivacity, passion, the state of being alive—these are some of the definitions *The Concise Oxford Dictionary* attributes to animation. Less exciting but more precisely, animation is the stasis-to-motion technique of creating the illusion of movement through the recording of successive stills shown sequentially.

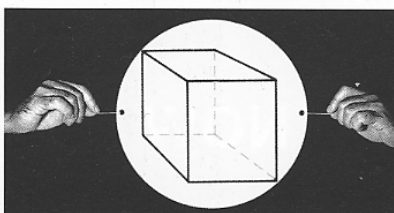
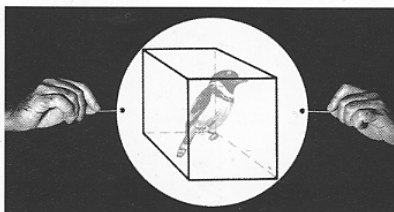
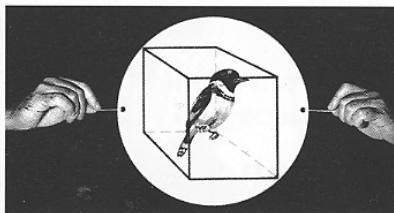
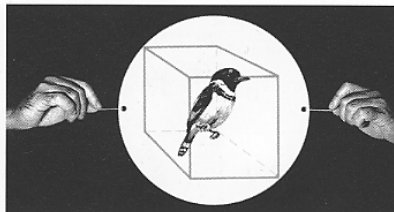
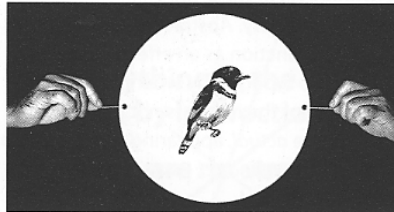
Persistence of Vision

Persistence of vision is a physiological phenomenon of perception which explains how we see motion through the animation of still images or words. Our mind's eye holds onto the images for a slightly longer duration than they are actually seen by the retina, so that a series of quick flashes is perceived as one continuous image.

The thaumatrope, a toy that was widely available in the nineteenth century, demonstrates persistence of vision. A disc is suspended between two strings and when spun, images placed on either side of the disc are perceived as one (Fig. 01). A flip-book, a series of images on individual pages, also demonstrates persistence of vision and is one of the earliest animation techniques. The lower left corner of *Moving Type* contains a flip-book, designed and produced by hand-stamping on paper with lead type and an ink pad.

It is because of persistence of vision that images sequentially projected (film) or displayed (monitor) with slight changes from image to image are perceived as one continuous motion. This is the perceptual foundation of all sequential media.

Fig. 01, Thaumatrope



Thaumatrope Illustration by Ned Drew

Excerpt from *Moving Type*
by Matt Woolman and Jeff Bellantoni
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Techniques

There are a number of techniques and materials used in traditional animation processes—cameraless, line and cell, stop-motion, and rotoscoping are a few. Cameraless animations, also known as scratch films, involve working directly onto the film celluloid, such as 16mm film clear leader or black leader. Clear leader allows the animator to draw directly onto the film, and the marks on the film block the light from the projector. Black leader, which has a black coating on the celluloid intended to block the light of the projector, can be scratched away to allow the light through, thereby creating *white* lines and marks when projected. In addition to literally scratching, black leader can be dissolved away with household bleach, colors applied, holes punched, and more—experimentation is recommended. Beautiful and extremely kinetic visual activity can be accomplished in cameraless animation when the frame lines of the film strip are ignored (040|043).

One of the most well-known but time-consuming methods of animation is line-and-cell animation. This technique involves working directly onto paper or transparent sheets of celluloid, frame by frame. Each individual drawing or cell is then photographed onto film or videotape, or digitally scanned (Fig. 02).

Stop-motion animation is also a frame-by-frame technique, but involves animating objects rather than drawings. Processes such as claymation and puppet animation are examples of the stop-motion technique. Objects are photographed onto film, videotape, or a computer (using video-capture software) frame by frame, making slight changes in the object's position after each exposure (Fig. 03).

Rotoscoping is a technique in which the image on each frame is traced or manipulated directly. Digital rotoscoping has made easier what was once a technique that involved complicated and expensive analog equipment (Fig. 04). All of these traditional analog techniques are still viable today, and many have become married to digital technology to reduce the time involved and ease the labor process.

040 | 043 Cameraless animation

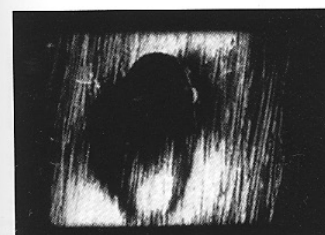
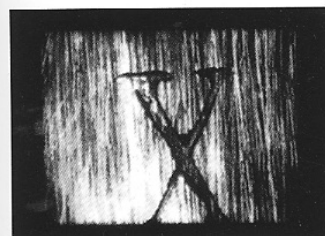
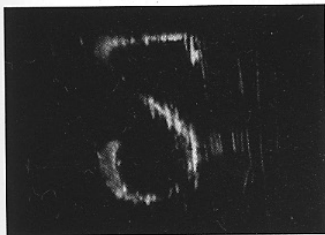
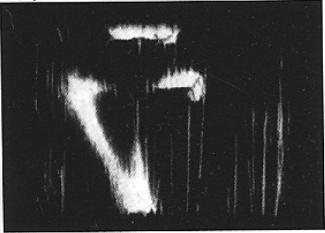


Fig. 02, Line animation

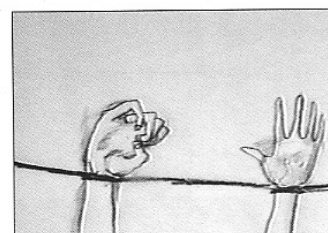
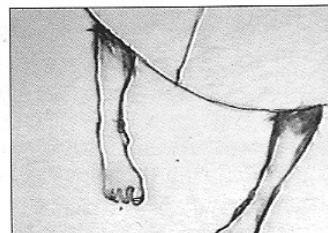
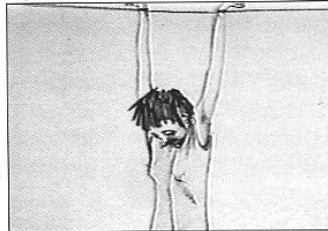


Fig. 03, Stop-motion animation

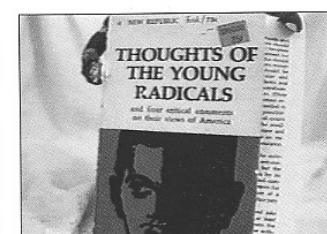
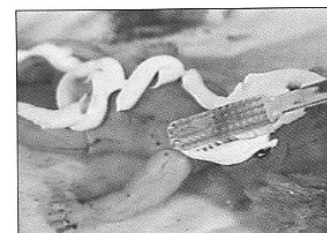
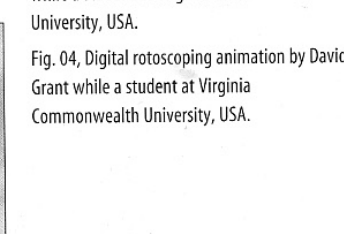
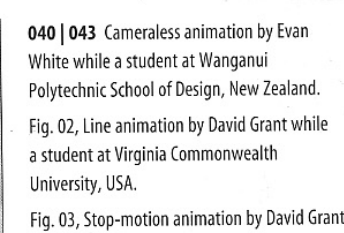


Fig. 04, Digital rotoscoping animation



040 | 043 Cameraless animation by Evan White while a student at Wanganui Polytechnic School of Design, New Zealand.

Fig. 02, Line animation by David Grant while a student at Virginia Commonwealth University, USA.

Fig. 03, Stop-motion animation by David Grant while a student at Virginia Commonwealth University, USA.

Fig. 04, Digital rotoscoping animation by David Grant while a student at Virginia Commonwealth University, USA.

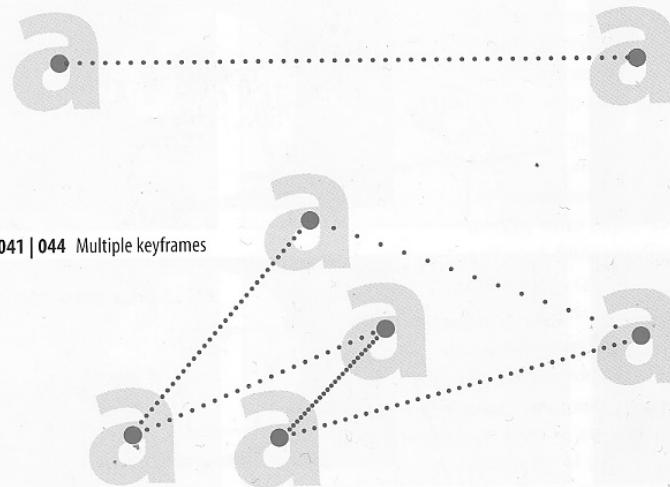
Fundamentals

Historically, animated films were hand-drawn and then photographed frame by frame onto film, and later, videotape. This technique is still in effect today, using digital technology to assist in the process, as opposed to animation that is completely digital, such as the Pixar Animations™ film *Toy Story*®. Producing an animation by hand is extraordinarily time-consuming—a two-minute animation at 24 frames per second would consist of 2880 individual drawings, one drawing for each frame (24 fps x 120 seconds=2880). Animators save time by duplicating individual drawings over a 2- or 3-frame duration. In other words, each drawing would be exposed onto film or video for 2 or 3 consecutive frames. This is known as the frame rate of the animation (working on 2s or 3s). If the 2880-frame animation was ‘shot on 3s’, then only 960 individual drawings would need to be completed. This is still extremely time-consuming, but less than it would have been otherwise.

Keyframes are the specific frames which designate the beginning and end of a movement or direction, opacity, scale, or other change in the nature of the activity. The frames which exist, or fill in, between keyframes are known as inbetweens. Digital animation software will complete an action by filling in the inbetweens once the keyframes have been designated.

The letter *a* is animated horizontally from the left side of the frame to the right; the action will occur over a period of 2 seconds. It is placed at the beginning position of the movement, at which point a keyframe is designated. Moving forward in the timeline 2 seconds, a second keyframe is designated. The software program will fill in the remaining positions of the letter across this path (Fig. 05). Multiple keyframes can exist in a sequence (041|044). Fig. 06 shows the timeline from Adobe After Effects™ for sequence 041|044—6 keyframes are represented for each change in position and direction.

Fig. 05 Keyframes



041 | 044 Multiple keyframes

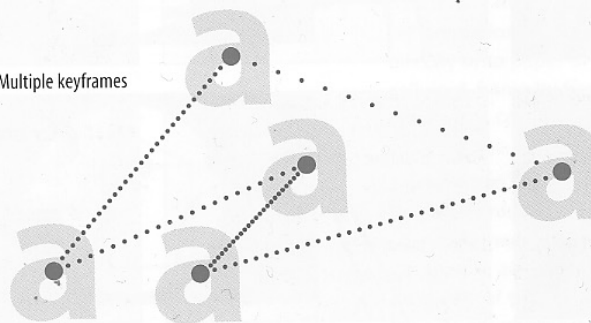
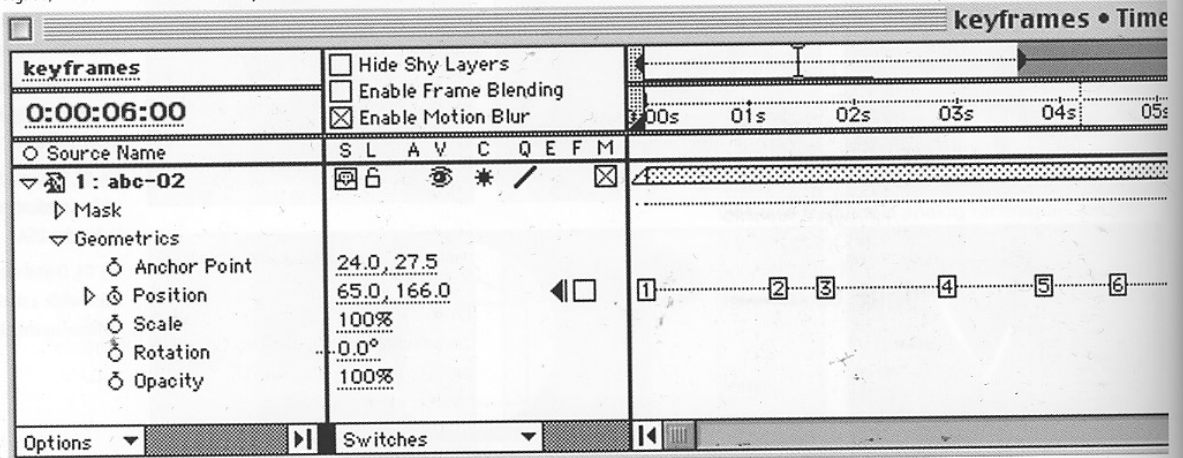


Fig. 06, Adobe After Effects™ time layout window



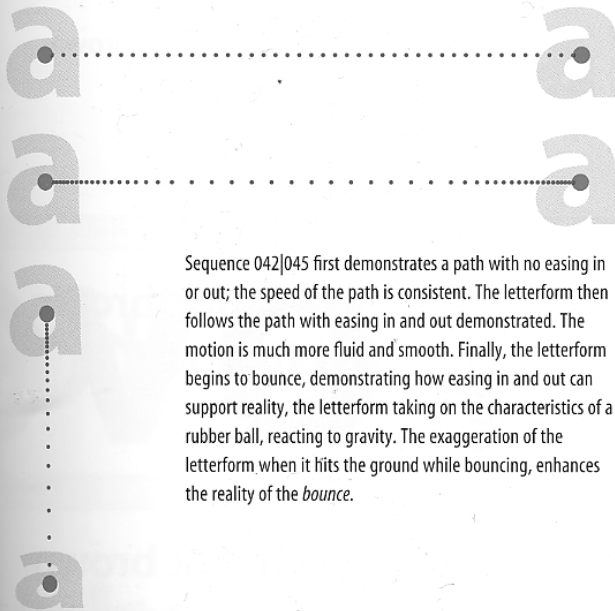
The steady transition from stasis to a constant speed is known as *easing in* and *easing out*. An automobile doesn't speed up or stop instantly, the change is gradual. Easing in and out adjusts the speed at the beginning and ending of a movement (the keyframes) to enhance the reality of the movement, create a particular effect, or allow a smoother motion for the path (042|045).

Both the duration and number of frames an action requires, and the distance a movement has to traverse in the frame, affect the speed and smoothness of animation. Assuming a constant distance, the greater the number of frames it takes to travel that distance, the longer the duration of the movement (slower and smoother). The fewer the number of frames the movement takes to travel that distance, the shorter the duration (faster, less smooth) (043|045).

Assuming a constant duration and number of frames, the greater the distance an object has to travel, the faster it will move. The shorter the distance an object has to travel, the slower it will move (044|045).

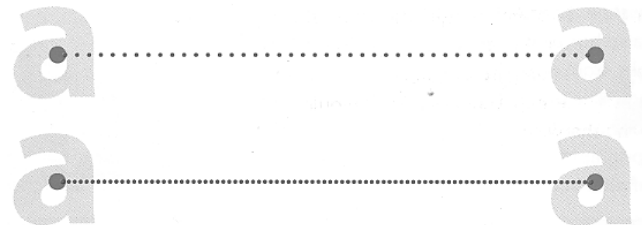
If a letterform was moving very rapidly vertically down the screen in a film, and we were able to capture that moment in a photograph, the resulting image would be blurred. This is because the pace is too fast for the film to differentiate between frames, so the perception in our brain is that they visually blur together. Digital animation programs possess a motion-blur filter which will add a directional blur appropriate to the actual direction, and enhance the reality of the speed and movement (Fig. 07).

042 | 045 Ease in/ease out

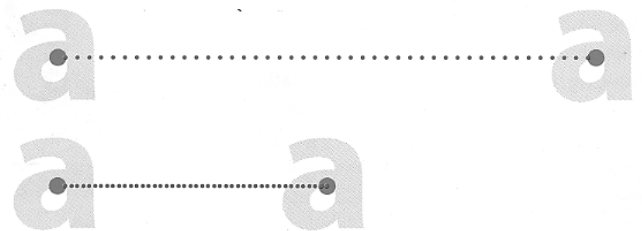


Sequence 042|045 first demonstrates a path with no easing in or out; the speed of the path is consistent. The letterform then follows the path with easing in and out demonstrated. The motion is much more fluid and smooth. Finally, the letterform begins to bounce, demonstrating how easing in and out can support reality, the letterform taking on the characteristics of a rubber ball, reacting to gravity. The exaggeration of the letterform when it hits the ground while bouncing, enhances the reality of the *bounce*.

043 | 045 Constant distance



044 | 045 Constant duration and number of frames



Based on 30 fps, sequence 043|045 travels a constant 316 pixels distance horizontally across the frame. The first attempt is set for a 45-frame duration, therefore the path is completed in 1.5 seconds. The second attempt is set for a 90-frame duration, therefore the path is completed in 3 seconds. Same distance, more frames, longer duration.

Sequence 044|045, also based on 30 fps, travels at a constant duration of 1.5 seconds. The first attempt is set for a distance of 316 pixels, therefore it takes 45 frames to complete the path. The second attempt is set for a distance of 162 pixels, half of the first distance, it still takes only 45 frames to complete the path, but appears to move more slowly. Same duration, less distance, slower movement.

Fig. 07

Space Type Time

Kinetics

- Direction
- Orientation
- Rotation
- Proximity
- Grouping
- Layering

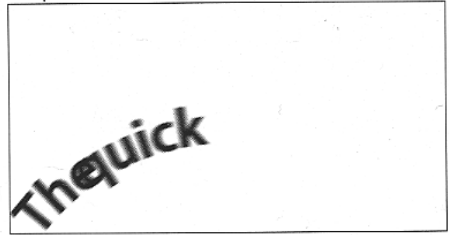
Kinetics

Kinetics is defined as actions or arrangements that produce, change, or imply the motion of objects. The ability to design for motion is the essence of typographic animation. In static typographic design, direction refers to the orientation of letterforms—including the way they are read—in a composition. Printed letters are conventionally arranged in words, and words into sentences, etc. on a horizontal baseline. The reading direction of these letters is also horizontal. Reading direction is left to right, from upper left to lower right of a single page. The letters are static, the reading eyes move. When we refer to direction in kinetic typography, we are also adding the literal definition of movement.

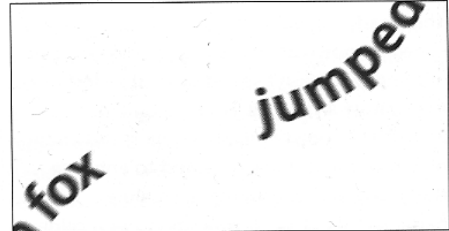
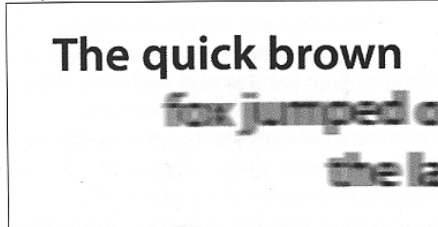
Orientation is the directional position of the baseline of the type. *Direction* is the course or line of the movement of the type. *Rotation* is movement around an anchor point, the center of the rotation. Direction and orientation can be horizontal, vertical, diagonal, circular, advancing, or receding. Direction, orientation, and rotation can either occur on the two-dimensional frame plane (the x and y axis), or spatially on the depth plane, advancing and receding (the z axis). Refer to the Cartesian coordinate system on page 21.

The determinates for hierarchy in print—small to large (scale), color, and position—are joined by the determinates of fast and slow and advancing and receding.

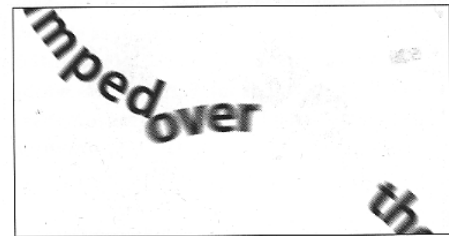
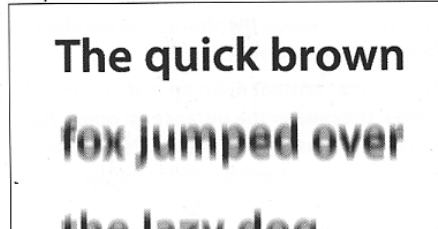
051 | 046 Direction: circular · Orientation: circular



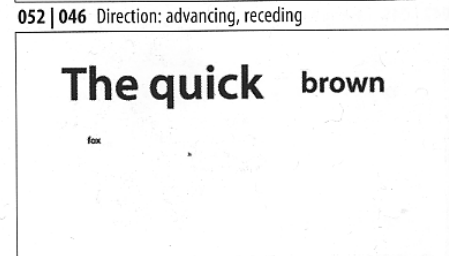
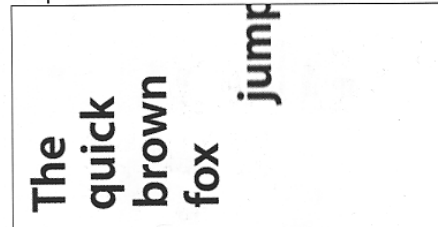
045 | 046 Direction: horizontal · Orientation: horizontal



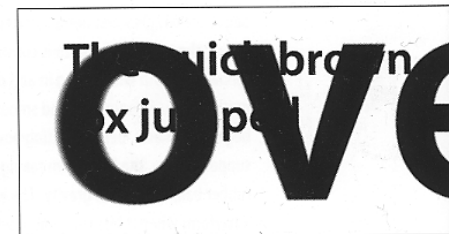
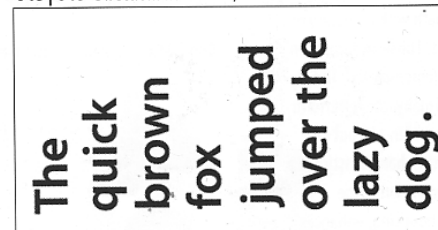
046 | 046 Direction: vertical · Orientation: horizontal



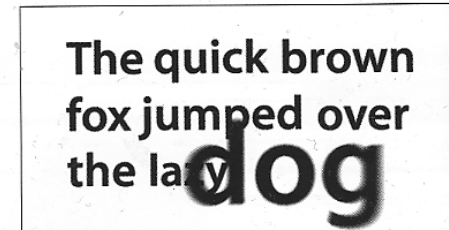
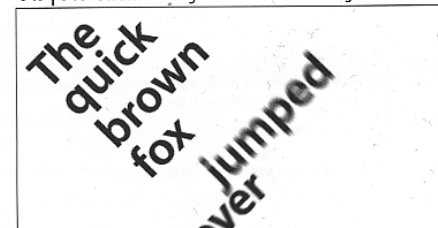
047 | 046 Direction: vertical · Orientation: vertical



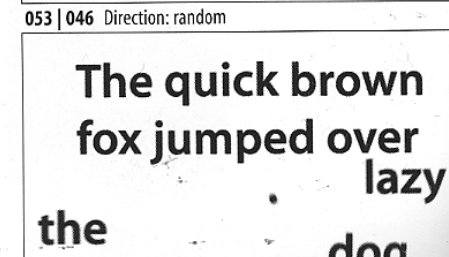
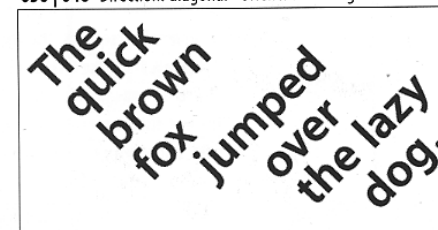
048 | 046 Direction: horizontal, vertical · Orientation: vertical



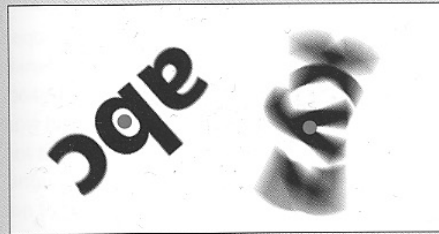
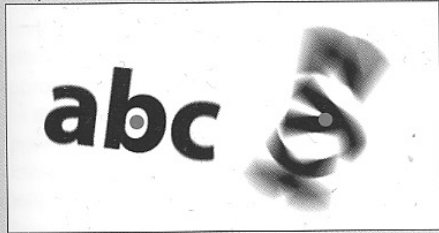
049 | 046 Direction: diagonal · Orientation: diagonal



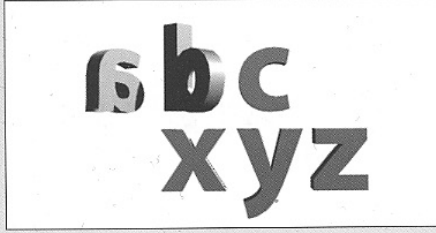
050 | 046 Direction: diagonal · Orientation: diagonal



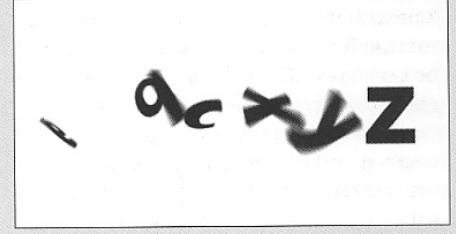
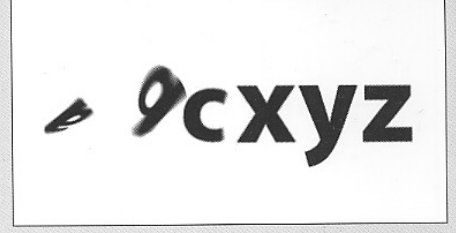
054 | 047 Rotation: flat, anchor point changes



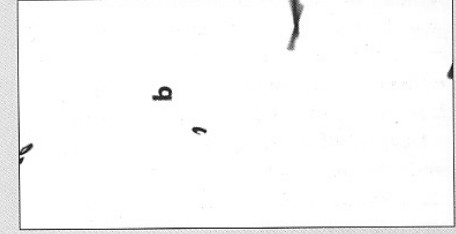
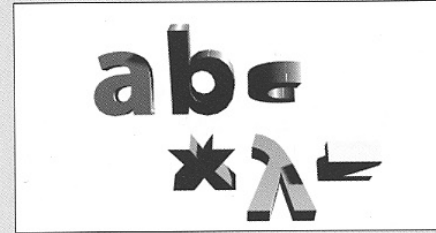
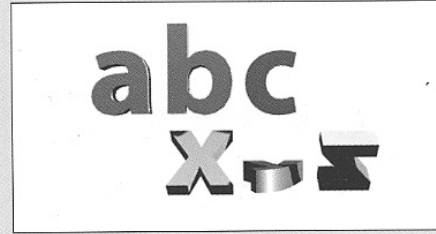
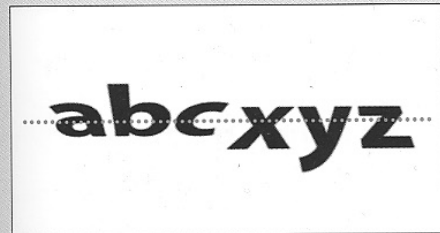
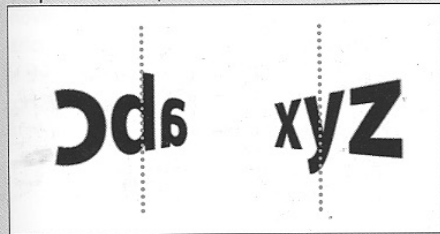
056 | 047 Rotation: spatial, vertical, and horizontal axis



057 | 047 Rotation: random



055 | 047 Rotation: spatial, vertical, and horizontal axis



Space Type Time

Kinetics

- Direction
- Orientation
- Rotation
- Proximity**
- Grouping
- Layering

Proximity

Proximity is the distance between letters, words, and lines of type created by altering the kerning, tracking, and leading relationships in text. Time-proven, optically measured parameters for *good* proximity remain important for legibility of type, particularly moving type on the screen.

However, interesting visual relationships and enhancement of content can occur when kerning, letterspacing, and leading are all set into motion. The definition of a word or meaning of a phrase can be supported (058|048), or a discovery can occur (059|048).

Altering proximity can be very conducive to dialog when the designer is attempting to capture the voice and emotions of the words being spoken (see *Intonation*, page 33). For example, increasing letterspacing visually supports the idea of satisfaction.



058 | 048 Proximity: leading, tracking

Curiosity is one of
the permanent and
certain characteristics
of a vigorous intellect.

Curiosity is one of
the permanent and
certain characteristics
of a vigorous intellect.

Curiosity is one of
the permanent and
certain characteristics
of a vigorous intellect.

Curiosity is one of
the permanent and
certain characteristics
of a vigorous intellect.

Curiosity is one of
the permanent and
certain characteristics
of a vigorous intellect.

C U R I O S I T Y

Unless one is a genius, it is best to aim at being intelligible.

Anthony Hope, *The Dolly Dialogues*, 1894

059 | 048 Proximity: kerning

Unless one is a
genius, it is best
to aim at being
intelligible.

Unless one is a
genius, it is best
to aim at being
g l i t i l e . e l i b

Unless one is a
genius, it is best
to aim at being
g l i n t i l e . e l i b

Unless one is a
genius, it is best
to aim at being
g l i t i e . e l b

Unless one is a
genius, it is best
to aim at being
d l t g i l .

Unless one is a
genius, it is best
to aim at being
intelligible.

Curiosity is one of the permanent and certain characteristics of a vigorous intellect.

Samuel Johnson, *The Rambler*, 1750–2

Sequential Proximity

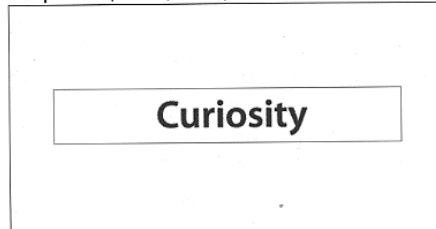
Moving type requires another delineation called sequential proximity. Effective and appropriate sequential proximity ensures that the appearance of each word in the text appears in the exact, or a relatively close vicinity, of the word which preceded it (060|049, 061|049). The intent should be to allow the eye of the audience to follow a consistent path and create a visual flow.

Sequential proximity applies to both transitional and directional situations (064|049). The designer must bear in mind how his/her particular culture reads, and try not to alter that too much. The English language reads from left to right, and from top to bottom (063|049).

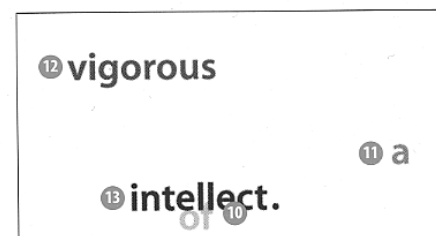
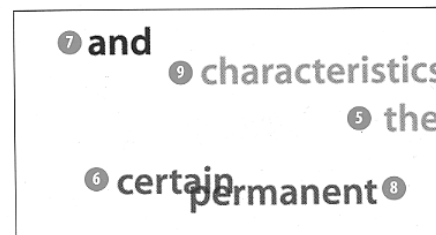
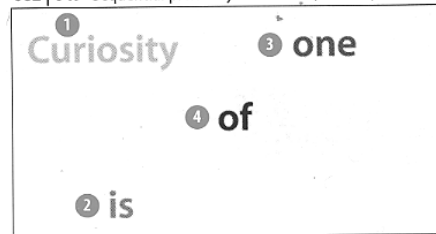
Words should not appear in random locations on the screen, as this makes it difficult for the eye of the audience to follow the text, causing disorientation and impairing legibility (062|049). The diagram to the right for sequence 062|049 shows the order in which the text appears from the first word through the last. This problem will increase as the physical size of the frame increases (film projection versus Internet Quicktime™ movies). It is possible to break away from strict directional proximity as long as the eye of the audience is allowed to follow a consistent path (065|049).

060 | 049 Sequential proximity: transition (flush left)

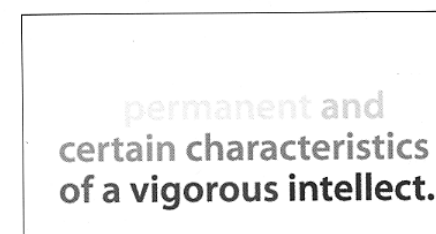
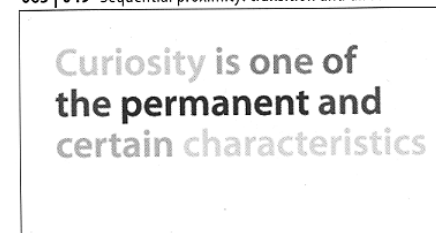
061 | 049 Sequential proximity: transition (centered)



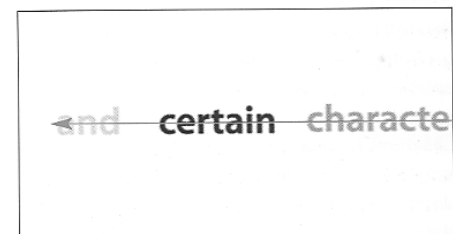
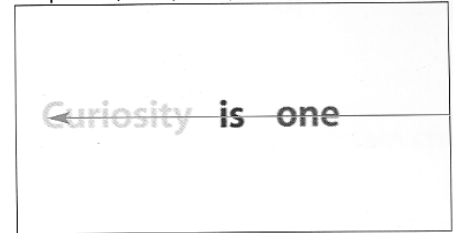
062 | 049 Sequential proximity: transition (random)



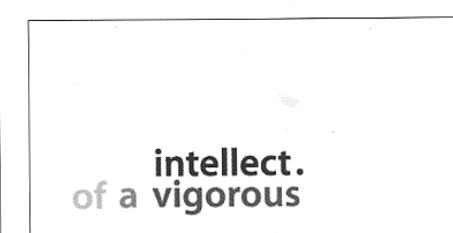
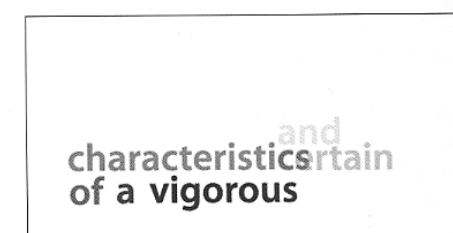
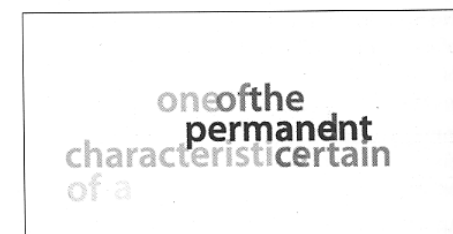
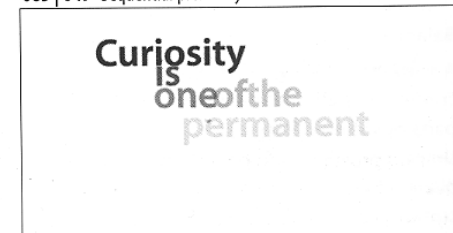
063 | 049 Sequential proximity: transition and direction



064 | 049 Sequential proximity: direction



065 | 049 Sequential proximity: transition and direction



Space Type Time

Kinetics

Direction
Orientation
Rotation
Proximity
Grouping
Layering

Grouping

Related to proximity is the concept of grouping. Like proximity, grouping applies to both directional and transitional situations, but is concerned with the *balance*, symmetrical or asymmetrical, and *disposition* of the typography within the space of the frame.

Balance

A symmetrically composed frame consists of type that is divided into parts of an equal shape, size, and similar position to the point, line, or plane of division. Symmetry implies correct proportion, comfort, and visual harmony. Film or television credits that scroll or crawl at the end of a presentation are a good example of type symmetrically composed—and perfectly centered within the frame. Scrolls can be either directional (066|050) or transitional (067|050).

An asymmetrically composed frame derives its visual balance through the interaction of the type with the negative space surrounding it. Asymmetry creates a visual tension which is desirable because it is often more interesting. Both directional and transitional sequences are shown here (068|050, 069|050).

Do you wonder that I was late for the theater when I tell you that I saw two Egyptians As . . . walking off arm in arm with the unmistakable swagger of a music-hall comedy team? . . . after forty centuries of the necessarily static Alphabet, I saw what its members could do in the fourth dimension of Time, 'flux', movement.

Alphabet 1964: International Annual of Letterforms

066 | 050 Grouping: symmetrical balance (direction)

Do you wonder
that I was late
for the theater
when I tell you
that I saw two
Egyptians A's . . .

068 | 050 Grouping: asymmetrical balance (direction)

for the theater
when I tell you
that I saw two
Egyptians A's . . .
walking off

walking off
arm in arm
with the
unmistakable
swagger of
a music-hall
comedy team?

. . . after forty
centuries of
the necessarily
static Alphabet,
I saw what its members co

could do in
the fourth
dimension
of Time,
'flux',
movement.

on of Time, 'flux', movement.

067 | 050 Grouping: symmetrical balance (transition)

Egyptians A's . . .
walking off
arm in arm
with the
unmistakable

069 | 050 Grouping: asymmetrical balance (transition)

Do you wonder
that I was late
for the theater
when I tell you
that I saw two Egyptians A's . . .

swagger of
a music-hall
comedy team?
. . . after forty
centuries of

. . . after forty
centuries of
the necessarily
static Alphabet,

the necessarily
static Alphabet,
I saw what
its members
could do in

I saw what
its members
could do in
the fourth
dimension
of Time, 'flux', movement.

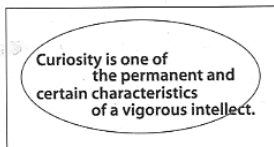
Disposition

In filmic terms, an *open frame* is one in which activity takes place outside the frame and the view of the audience. A *closed frame* is one in which all of the activity is within the frame and view of the audience.

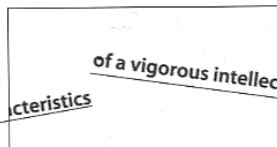
In typography we refer to this as *disposition*—the arrangement of letters and words to each other and the edge of the frame. The disposition of a typographical sequence is therefore either dissonant or consonant.

Consonance implies contraction and occurs when the disposition of type is tightly arranged, or all the movement occurs within the frame (070|051). *Dissonance* implies expansion and occurs when the activity of the type breaks the boundaries of the frame (071|051).

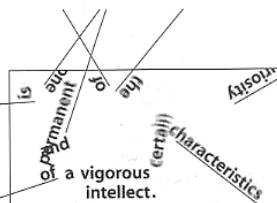
Particular to moving type is the ability to alter the disposition over time. Type entering from outside the frame in dissonant arrangement can manoeuvre itself into a consonant composition (072|051) and vice versa (073|051).



Consonance

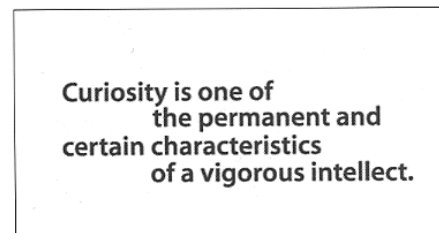
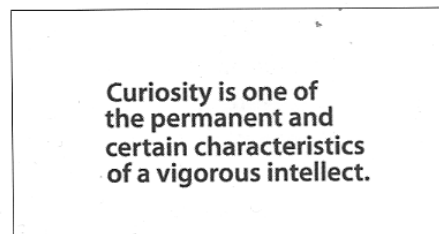
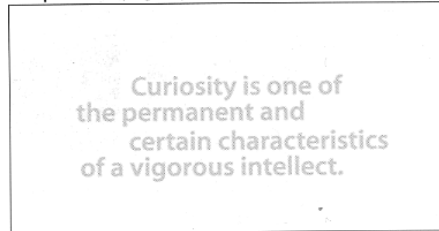


Dissonance

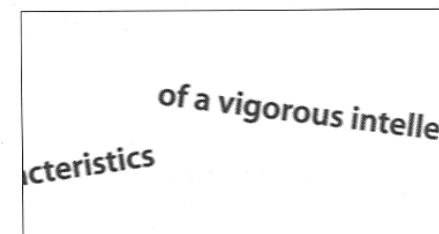
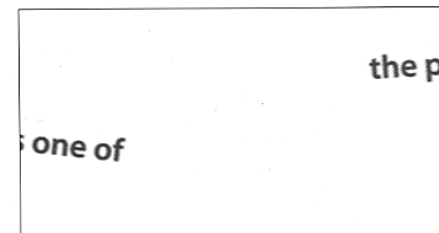
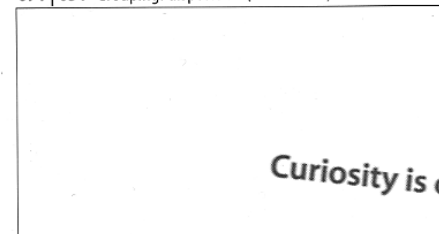


Consonance to Dissonance

070 | 051 Grouping: disposition (consonance)



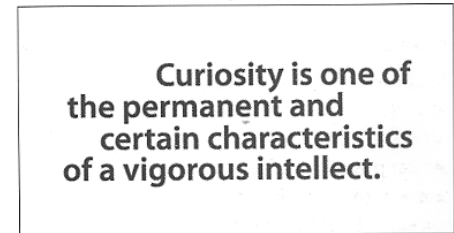
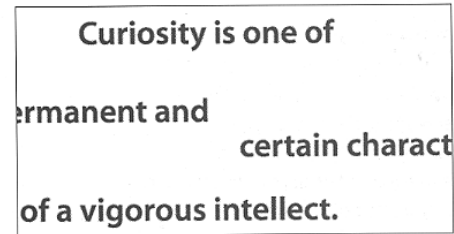
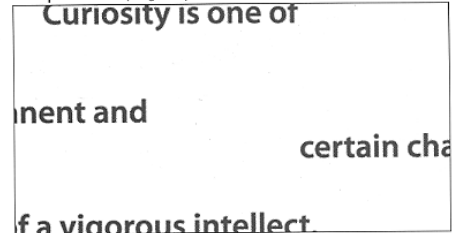
071 | 051 Grouping: disposition (dissonance)



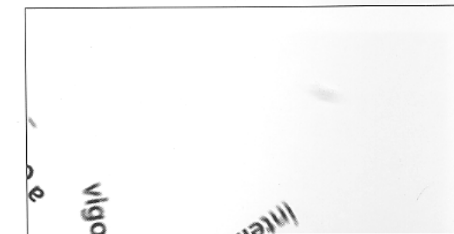
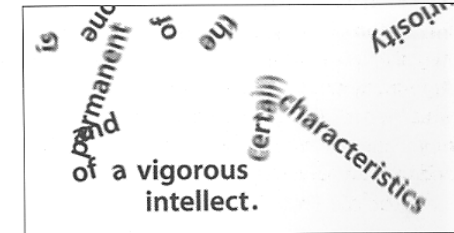
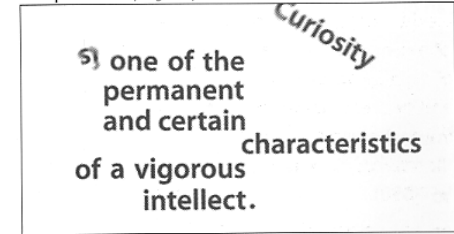
Curiosity is one of the permanent and certain characteristics of a vigorous intellect.

Samuel Johnson, *The Rambler*, 1750–2

072 | 051 Grouping: disposition (dissonance to consonance)



073 | 051 Grouping: disposition (consonance to dissonance)



- Direction
- Orientation
- Rotation
- Proximity
- Grouping
- Layering**

Layering

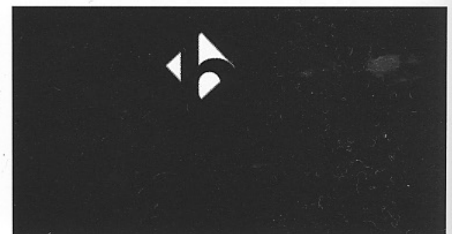
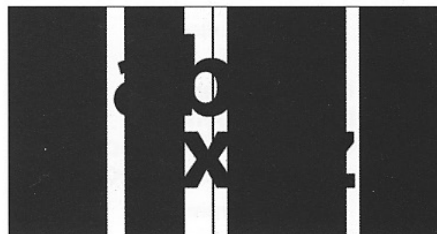
Three different types of layering can be achieved creating different levels of opacity: opaque, translucent, or transparent. Varying levels of opacity can aid in determining visual layering from top to bottom, or front to back.

Opaque refers to the state of complete opacity when, in layered letters, words, and shapes, the uppermost layer completely covers and blocks the layers below. When working with simple color or positive-negative palette combinations, a type of revealing can occur (074|052, 076|052).

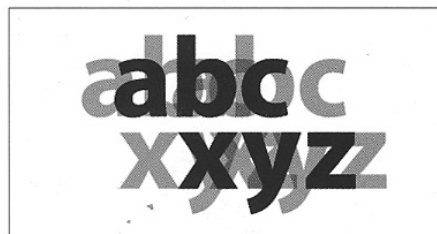
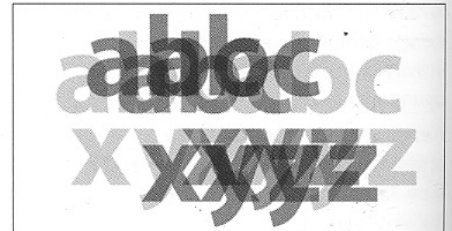
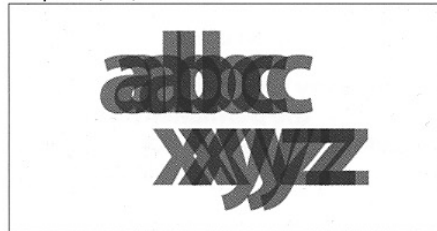
A translucent state of opacity is achieved when some light is allowed to pass through. There are varying values of translucency, and when multiple translucent words and letters are layered, a type of ghosting optical effect can occur, resulting in intriguing letterform combinations (075|052). When colors are translucent and overlap, they mix in real time (076|052).

Transparent is that state of opacity in which layered elements appear hollow. Outlined letterforms and letterforms punched out of solid shapes allow layers to be completely seen (076|052).

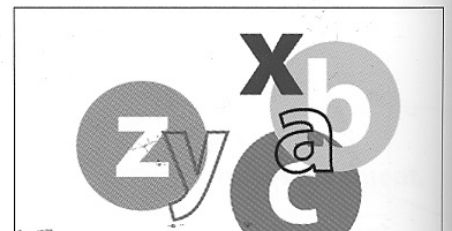
074 | 052 Opacity: opaque



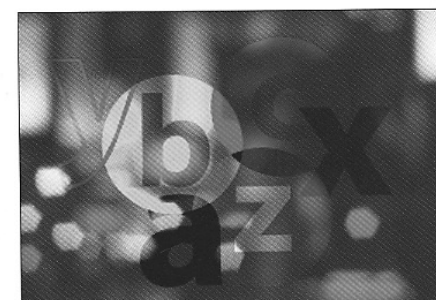
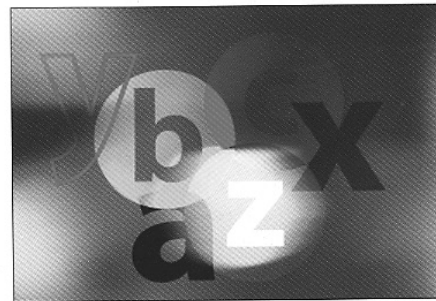
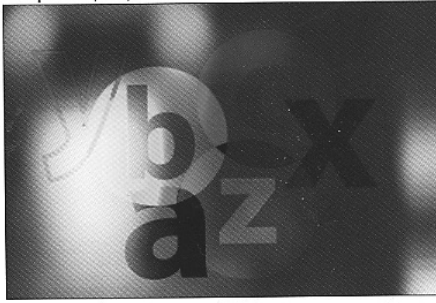
075 | 052 Opacity: translucent



076 | 052 Opacity: opaque, translucent, transparent



077 | 053 Opacity: translucent, transparent

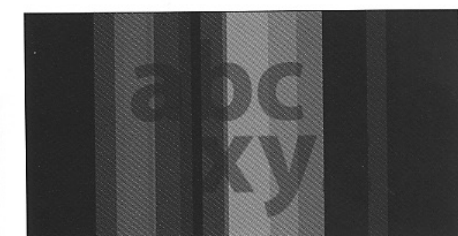
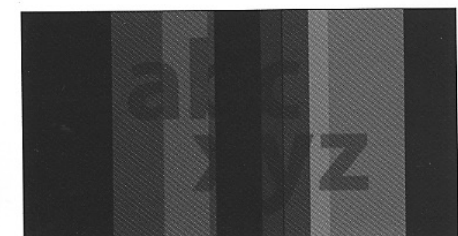
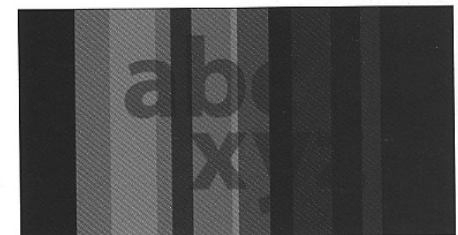
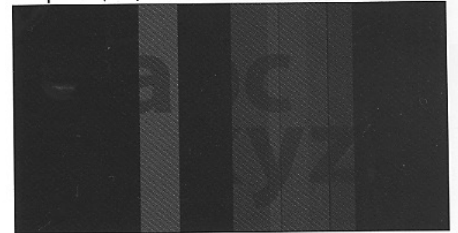


Opacity can also be effective over continuous tone imagery: in this case, an out-of-focus video of colorful lights functions as a background in which translucent and transparent letterforms allow the light to diffuse through at varying levels (077|053).

Moving colored rectangles overlap to reveal letterforms beneath, their state of translucency mixing live to create a multitude of color combinations (078|053).

The concept of tonality (closely related to opacity but not to be confused with it) refers to screen or tint of color, but still in an opaque state. It refers to the general lightness or darkness of the hue (see page 30).

078 | 053 Opacity: translucent



Space Type Time

Sequence

Structure

Juxtaposition

Hierarchy

Transition

Rhythm and Pace

Duration and Pause

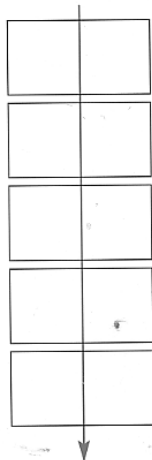
Foreshadow and Recall

Sequence Structure

Structure is the physical arrangement and appearance of a sequence—how the content is organized and presented. Typically film, video, and Quicktime™ sequences have a linear structure; they have a definite beginning, middle, and end (Fig. 01). Linear implies a unilateral direction toward a predetermined message. Interactive hypermedia experiences, such as websites, possess a non-linear structure and multi-linear content delivery (linearity is multiplied and simultaneous). These structures allow navigational choices and random access by the audience, thereby altering possible interpretations in the message or narrative structure (Fig. 02).

There are essential differences in moving typography that are present in linear and non-linear structures. In broadcast television, which is linear, the pace of editing is often quick, the type duration is short, and functions more as image. The type is meant to be seen, not read (with the exception of credits, which are rarely read). Broadcast typography is presented in a predetermined voice, with the intention of leaving an impression.

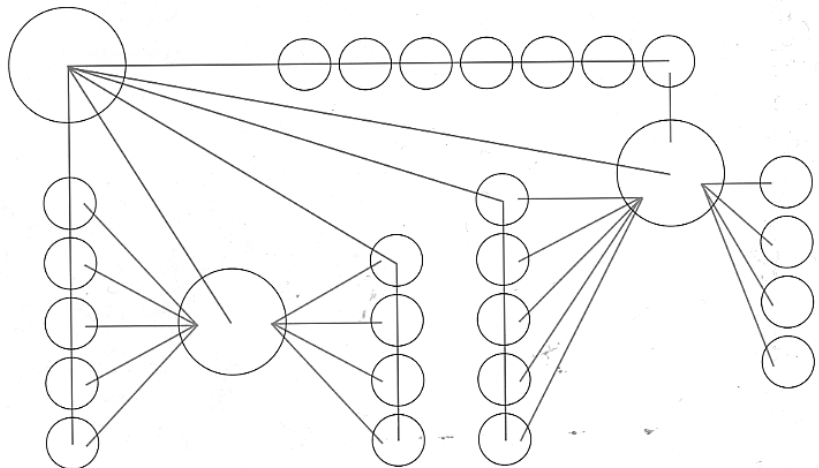
Fig. 01, Linear structure diagram



The typography in film title sequences, also linear, has a particular purpose—to give credit to those involved in the making of the film. The choices involve typeface and editing and image, and the intent is to set an expectant mood for the film to follow. Whether the credits are actually read or not often seems unimportant.

The emphasis in interactive typography is more on the structure, which is non-linear. Navigation and audience participation allow for text to be read and contemplated, more like a book. The structure exists in potential, to be defined by the audience, who share control of the spatial structure of the work. Even when linear sequences appear in digital media, they can often be viewed repeatedly on the computer itself, which gives them a different life than on television or film. Broadcast type is repeated somewhat randomly over a much longer period of time, with no viewer control over when sequences will play, and film title sequences require a return to the theater or video-rental store.

Fig. 02, Non-linear structure diagram



Dynamic Juxtaposition

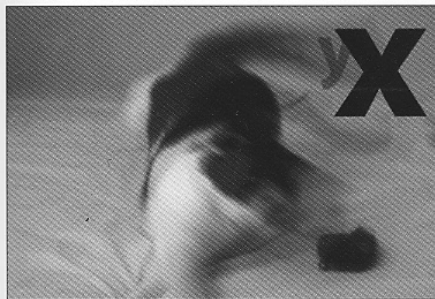
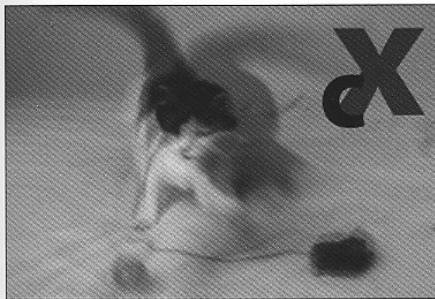
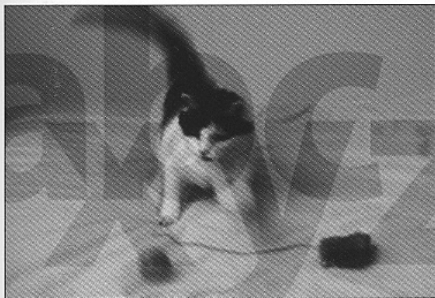
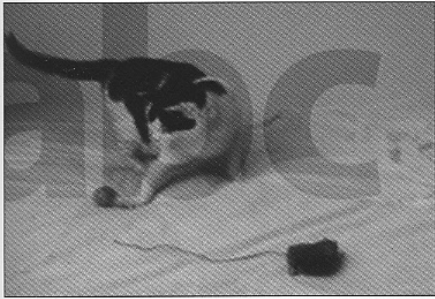
To juxtapose visual elements, imagery, and typography, is to place them side by side. Within the context of a linear sequence, *dynamic* juxtaposition can occur. Type can be layered, occur sequentially, or appear simultaneously with image and other type elements. And because of the dynamic nature of the sequence, the juxtapositions are in flux and often unstable.

When type and image are layered, the type is visually integrated within the image, often resulting in the type functioning as image. Layered juxtaposition also occurs when the type overlaps the image, but is not necessarily integrated within it (079|055).

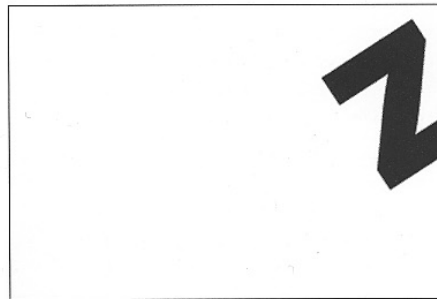
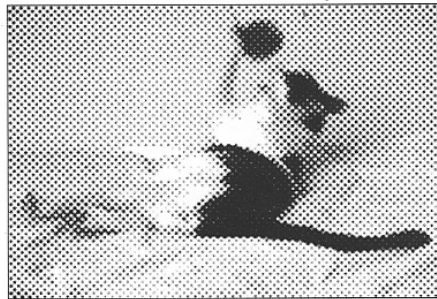
When type and image are sequentially juxtaposed, they do not appear within the frame at the same time, but instead appear alternately or successively. Sequential juxtaposition relies on memory, because the viewer is making relationships between the elements as they occur (080|055).

Simultaneous juxtaposition occurs when type and image appear at the same time within the frame and are visually separated, but not layered. Most commonly simultaneous juxtaposition includes the creation of *zones* of information (081|055). These three categories of dynamic juxtaposition are not exclusive—a sequence can be defined within the parameters of one, two, or all three categories.

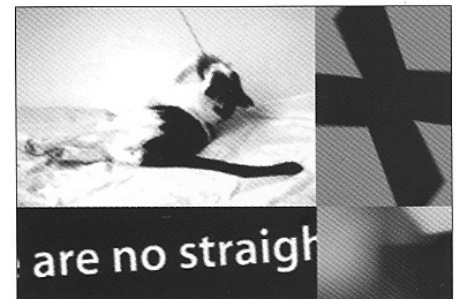
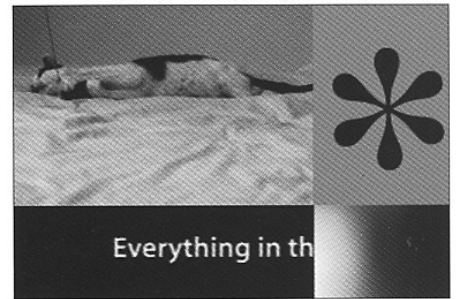
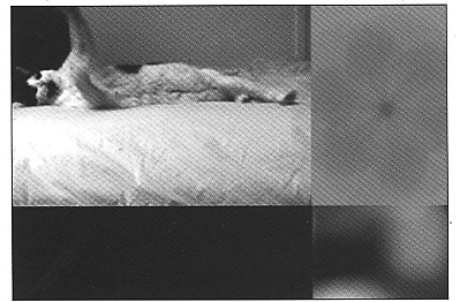
079 | 055 Dynamic juxtaposition: layered



080 | 055 Dynamic juxtaposition: sequential



081 | 055 Dynamic juxtaposition: simultaneous



Space Type Time

Sequence

- Structure
- Juxtaposition
- Hierarchy**
- Transition
- Rhythm and Pace
- Duration and Pause
- Foreshadow and Recall

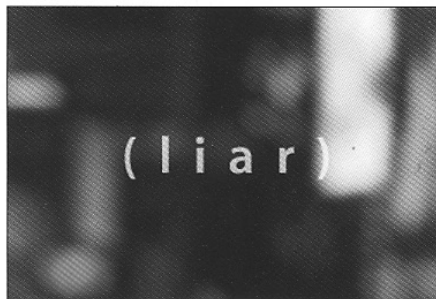
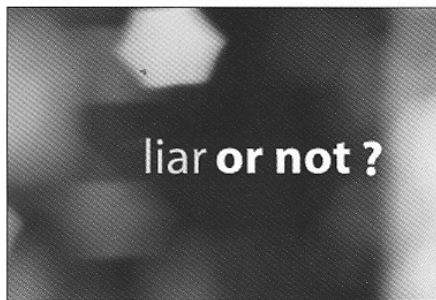
Hierarchy

An important component of sequence structure is hierarchy. This is not in reference to visual hierarchy, demonstrated throughout the book in regards to typographic and formal characteristics, spatial relationships, and kinetics. *Structural* hierarchy is specific to the three components of a sequence (when two or all three are present)—type, image, and audio—and determines how a message is disseminated.

Sequential structure can be *type*, *image* or *audio dominant*. The dominant element is the main carrier of the message. The other two elements play a supportive role, and while they enhance meaning, they are not critical components in the understanding of the message (082|056, 083|056, 084|056, 086|57).

A synthesis of hierarchy between type, image, and audio can, and most often does, occur (085|057). A *parallel* synthesis occurs when all three components are of relatively equal importance, but removing one of them will not affect the message's intent. An *integrated* synthesis occurs when all three components are critical and must be present. Removing any one of them will drastically affect, or cause a collapse, in the communication.

082 | 056 Hierarchy: audio dominant

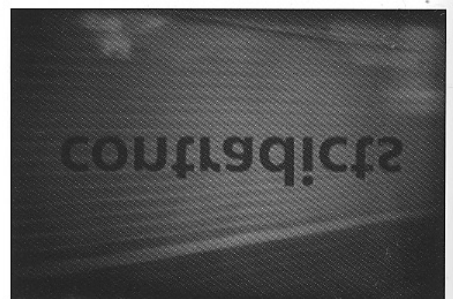
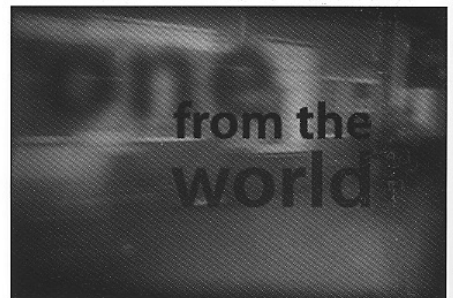
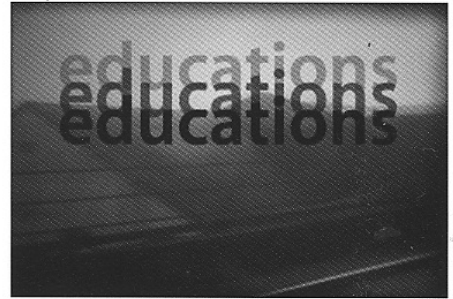


We receive three educations, one from our parents, one from our schoolmasters, and one from the world. The third contradicts all that the first two teach us.

Baron Charles de Montesquieu, eighteenth century

083 | 056 Hierarchy: type dominant

084 | 056 Hierarchy: type dominant



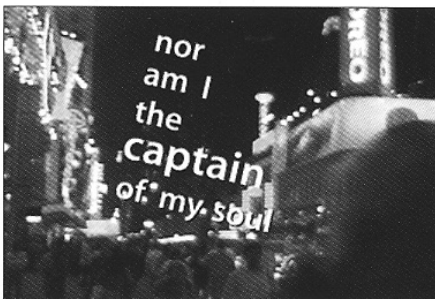
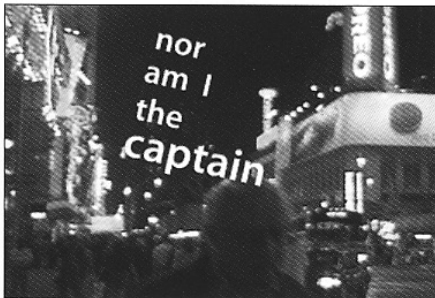
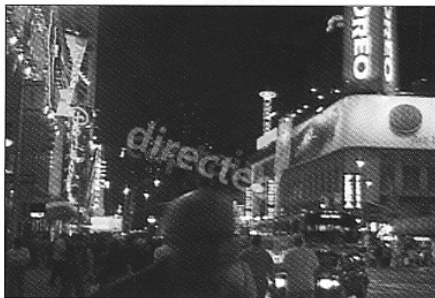
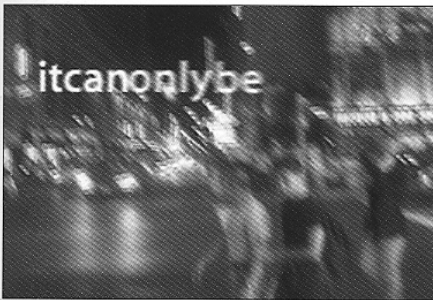
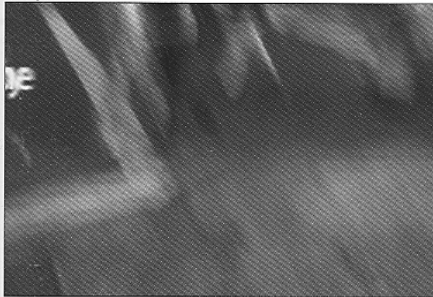
My fate cannot be mastered; it can only be collaborated with and thereby, to some extent, directed. Nor am I the captain of my soul; I am only its noisiest passenger.

Aldous Huxley, *Adonis and the Alphabet*, 1956

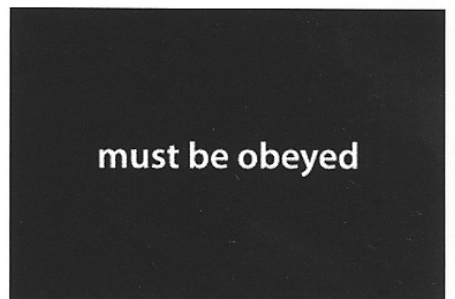
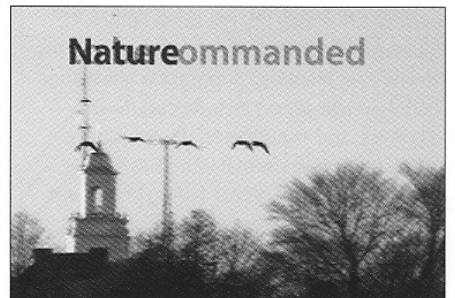
Nature, to be commanded, must be obeyed.

Sir Francis Bacon, *Novum Organum*, 1620

085 | 057 Hierarchy: synthesis



086 | 057 Hierarchy: image dominant



Space Type Time

Sequence

Structure
Juxtaposition
Hierarchy
Transition
Rhythm and Pace
Duration and Pause
Foreshadow and Recall

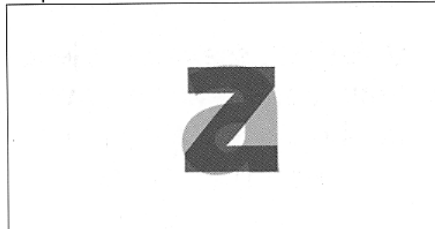
Transition

In narrative sequences, transitions are used to emphasize the passing of time. In early films radial wipes, which mimic the movement of clock hands, implied time had passed as the film transitioned from one scene to the next, fades to black signaled the *end* of a particular moment, and dissolves from one scene to the next functioned as a comfortable formal device.

Transitions are beneficial to moving type because they are inherently dynamic. They are good formal devices, because it is often difficult to tell words apart visually, particularly if they are the same color, typeface, and size. A transition signals to the viewer that the word or phrase is changing. Common transitions include cuts, fades, dissolves, and wipes. Specialty transitions utilize otherwise normal effects as formal transition devices. Words fading in and out are also easier on the eye of the viewer/reader (087|058).

Unfortunately, many software programs offer numerous transition effects which are silly or otherwise unnecessary and pure visual *candy*. These should be avoided, as they can interfere with the content.

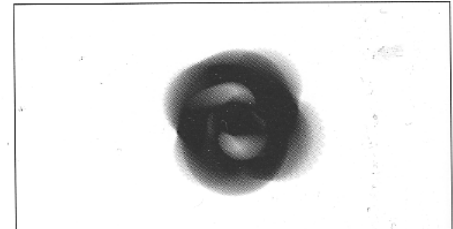
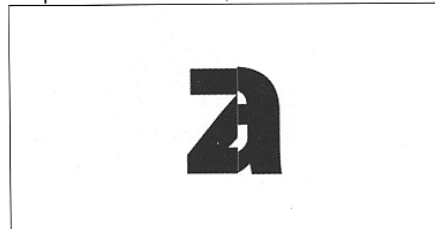
087 | 058 Transition: dissolve



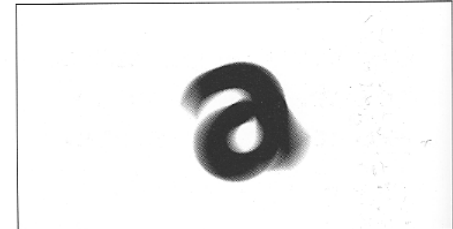
087 | 058 Transition: specialty, rotation



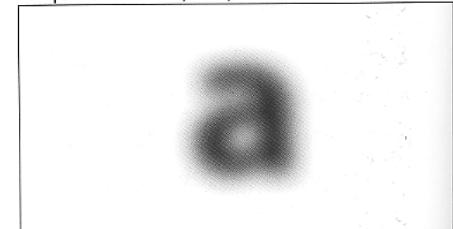
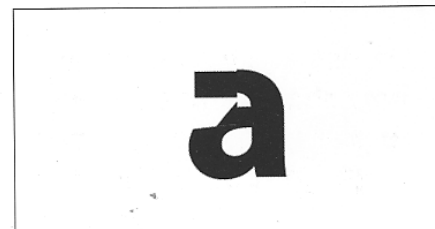
087 | 058 Transition: linear wipe



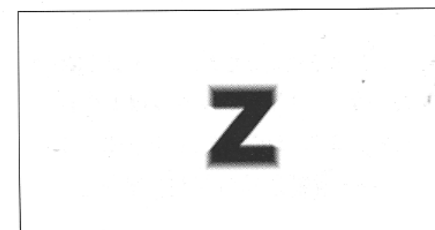
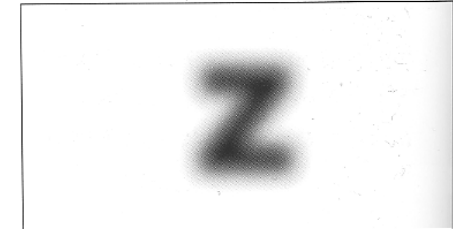
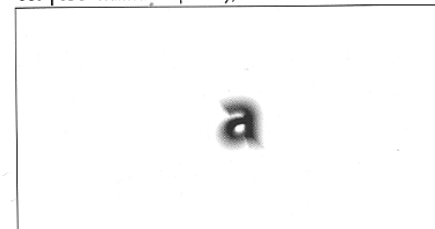
087 | 058 Transition: radial wipe



087 | 058 Transition: specialty, blur



087 | 058 Transition: specialty, zoom



Unless we see our subject, how shall we know how to place or prize it, in our understanding, our imagination, our affections?

Thomas Carlyle, 'Burns', 1828

Transitions *can* emphasize content. Quick-cut edits support the concept of speed and energy, and can aid in the building of a climax. A word with a slow-fade transition applied to it is to be contemplated.

Transitions can also function as support in the reading of the text. The use of different transitions with the same overall concept in a type sequence is demonstrated in this aphorism: cut, fade, dissolve, wipe, blur, zoom.

091 | 059 Transition: linear wipe

Unless we see our subject,
how shall we know how
to place or prize it, in our
imagination? ←

093 | 059 Transition: specialty, zoom

Unless we see our subject,
how shall we know how
to place or prize it, in our
understanding ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
imaffections? ←

Unless we see our subject,
how shall we know how
to place or prize it, in our
?

088 | 059 Transition: cut

089 | 059 Transition: fade

090 | 059 Transition: dissolve

Unless we see our subject,
how shall we know how
to place or prize it, in our
imagination ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
affections ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
imagination ?

092 | 059 Transition: specialty, blur

Unless we see our subject,
how shall we know how
to place or prize it, in our
imaffections ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
understanding ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
affections ?

Unless we see our subject,
how shall we know how
to place or prize it, in our
?

Unless we see our subject,
how shall we know how
to place or prize it, in our
imagination ?

Space Type Time

Sequence

- Structure
- Juxtaposition
- Hierarchy
- Transition
- Rhythm and Pace**
- Duration and Pause
- Foreshadow and Recall

Rhythm and Pace

Rhythm is an action that recurs regularly, and pace is the rate of that rhythm. There are several ways to design with successful rhythm and pace, including creating visual rhythmic beats, contrasts in the pace of editing and movement, and paying close attention to the rhythmic relationships between type, image, and audio.

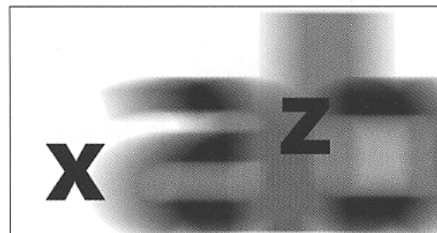
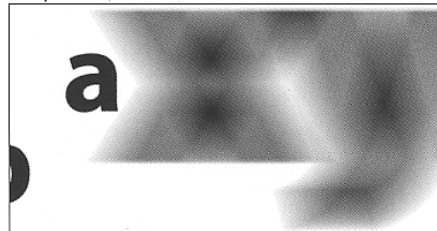
A visual rhythmic beat occurs when repetition of a word, or a sequence of words, happens in a consistent manner. The viewer becomes accustomed to this visual repetition.

Repetition of a word or phrase can also be a device for emphasis or hierarchy (see **Foreshadow and Recall**, page 62) and allows for a shorter duration, because the repetition of the word or phrase makes up for the time factor.

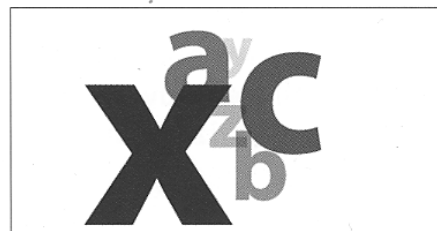
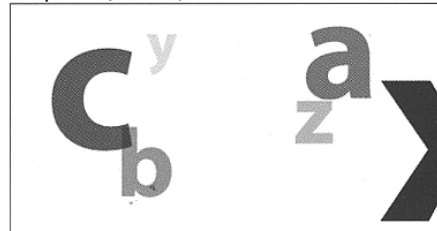
In addition to striving for an overall, comfortable rhythm and pace of the sequence, a designer can create contrasts in the pace of editing (duration) and movement between elements within the sequence. Type moves at different speeds, one blurringly fast in the background creating a type of visual texture, the other elements moving somewhat more slowly in the foreground. The contrast between them emphasizes the pace of all the elements (094|060).

Earlier, the concepts of scale and tonality were mentioned as factors in establishing depth: type close to the viewer and the edge of the frame is larger and darker, while type that is farther away is smaller and lighter. Pace adds to these factors, because type that is closer also moves past the frame much faster, while type that is farther away moves more slowly (095|060). This occurs because large type closer to the edges of the frame has a shorter distance to travel to cover the span of it, while type in the distance has a much farther distance to travel.

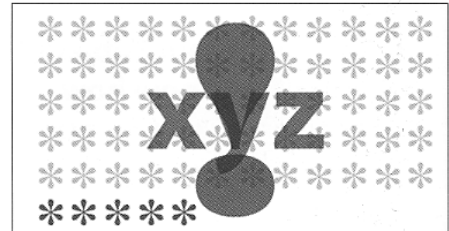
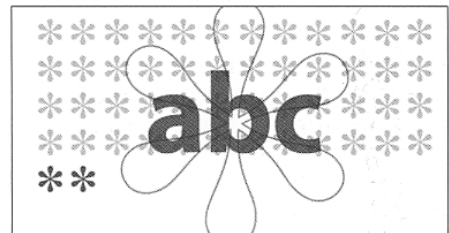
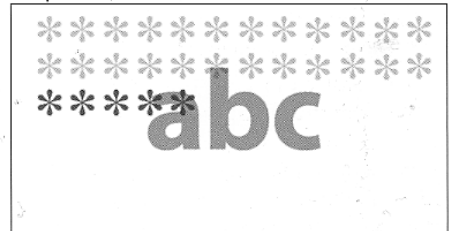
094 | 060 Rhythm and pace



095 | 060 Rhythm and pace



096 | 060 Rhythm and pace, no audio



097 | 060 Rhythm and pace, beat one

098 | 060 Rhythm and pace, beat two

099 | 060 Rhythm and pace, beat three

Structural Relationships of Type and Image to Audio

The relationship of the rhythm and pace of the visual elements (type and image) to that of the audio track in editing is categorized as *parallel*, *irregular*, or *counterpoint*.

In parallel structures the rhythm and pace of the visual elements is edited in perfect timing with that of the audio. In irregular structures, the rhythm and pace of the visual elements is uneven or inconsistent, while the audio is regular, and often prominent.

This relationship can also be reversed. In counterpoint structures, visual elements with a slow rhythm and pace are edited in counterpoint to a fast rhythm and pace of the audio track. These structural relationships between type, image, and audio are not exclusive—a sequence could theoretically contain any or all of them.

The diagram (below right) of sequence 097|060 demonstrates its type-to-audio structural relationships. Track 01 is consistent to the rhythm and pace of the audio, but progressively increases its pace. Track 02 is consistent and fast-paced throughout. Track 03 appears on every fourth beat; it is consistent but acts in counterpoint to the other tracks. Track 04 also acts in counterpoint to the other tracks, creating a consistently paced visual beat. Track 05 represents the audio component in visual wave form.

Sequences 097|060, 098|060, and 099|060 are visually identical, but the audio track is not. Each audio track has a different rhythm, but shares the same pace. Therefore the rhythm and pace of the typographical elements is always even to the audio. Even when viewing without audio (096|060), the rhythm and pace is detectable.

In audio, amplitude is the intensity or loudness of a sound. Typographic scale, weight, and tonality/opacity can create a visual relationship to the amplitude of the audio.

When making editing choices that determine rhythm and pace, remember that an overly consistent style can be predictable and monotonous. To avoid this, contrast in the pace of the editing should be introduced.

Parallel structure

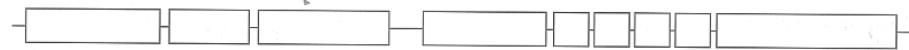


Visual elements: consistent rhythm and pace



Audio: consistent rhythm and pace

Irregular structure

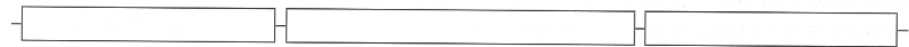


Visual elements: inconsistent rhythm and pace

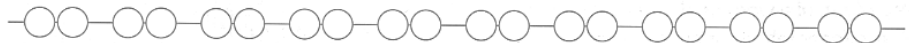


Audio: consistent rhythm and pace

Counterpoint structure



Visual elements: slow rhythm and pace

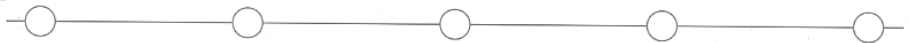


Audio: fast and consistent rhythm and pace

Counterpoint structure

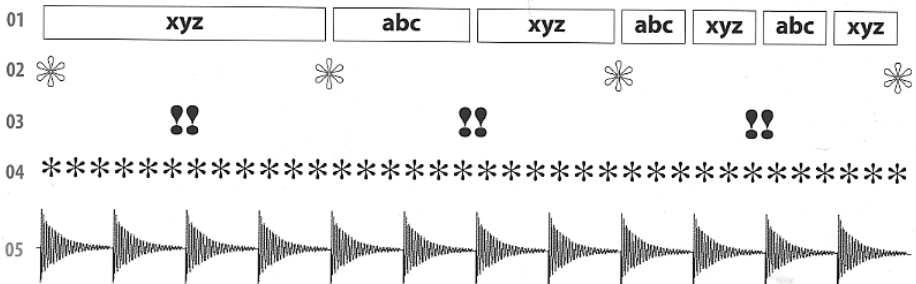


Visual elements: fast rhythm and pace



Audio: slow and consistent rhythm and pace

097 | 060 Rhythm and pace, beat one



Space Type Time

Sequence

Structure

Juxtaposition

Hierarchy

Transition

Rhythm and Pace

Duration and Pause

Foreshadow and Recall

Duration and Pause

Duration refers to the length of time a word or phrase appears and remains within the frame, moving or static, while pause refers to the length of time between the appearance of a word or phrase. Duration and pause are in direct correlation to the established rhythm and pace of the sequence.

Duration not only determines legibility by allowing enough time for reading to occur, but can also be a method to punctuate meaning and establish hierarchy. Pause allows time for the viewer to ponder what was just presented before the next event occurs; a visual rest stop. It can also be used as a device to create anticipation—what will occur next?

However, duration and pause that exceeds necessity can be laborious for the reader/viewer, and too short a duration hinders readability and causes disorientation.

Foreshadow and Recall

Moving type is ephemeral, the experience is fleeting. Nothing is left when it is over except an impression. Foreshadowing is to warn or indicate a future occurrence or event.

Foreshadowing a word or phrase creates a question situation, then is later recalled (in normal sequence) to answer the foreshadow. Recalling or repeating a word or phrase reminds the viewer of what has already past.

I and me. I feel me—that makes two objects. Our false philosophy is embodied in the language as a whole: one might say that we can't reason without reasoning wrong.

Georg Christoph Lichtenberg, *Aphorisms*, 1764–99

100 | 062 Duration and pause, foreshadow and recall

I and me

I feel me

twoo

that
makes
two two
objects

that
makes
two two
objects

our
philosophy

our false
philosophy
is

one might say

E M B O D I E D

EMBODIED
in the language

that we can't reason

EMBODIED
as a whole

reasoning

without
reasoning

without
reasoning
wrong

In sequence 100|062, duration and pause are used as devices where words of the aphorism are repeated. *I* and *me* stay in the frame while *and* and *feel* appear sequentially to complete the phrases *I and me. I feel me*. This method is also utilized with the phrase *embodied in the language, as a whole*—the word *embodied* remaining, and again with the word *reason*, which later transitions into *reasoning*.

Foreshadow and recall are employed, with the word *two* appearing before the complete phrase *that makes two objects*, and then recalling itself, thus enhancing the concept of two by appearing twice. And again, less successfully, when the phrase *our philosophy is* appears before *false*, although the complete phrase correctly reads *our false philosophy is*. The idea is to emphasize the word *false* by introducing it later.