

RICHARD WILLIAMS STUDIO PRINCIPLES (After Disney, 1937)

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In this country, all of us without exception have learned working methods from people who are now professionally inferior to ourselves. A moments thought will confirm that we are, in most technical respects, raw beginners — at least in comparison to our peers at the Disney and other major American studios.

Let us now learn from their hard won experience and simplify and standardise our working methods, in order to free ourselves to produce better work.

Obviously these notes are not final in any sense but are a rough guide to base our own procedures on. They were made in 1937 when Disney was creating our medium, and in the main are still their working procedures.

Please read these notes very carefully. Aside from the difficulty and trouble taken to obtain them, they are worth their weight in gold. They contain clear delineations of the mistakes, often very basic ones, which we often make.

Dick.

Roy Naisbitt has additional, more esoteric notes which can be borrowed and returned under penalty of death and slow torture.

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## GENERAL OUTLINE OF ANIMATION THEORY AND PRACTICE

### 1. Benefit of exchange of ideas:

A. Spirit that exists here of co-operation and exchange of ideas should be encouraged, as it enables beginners in animation to get a head start, pick up methods in use and improve on them instead of starting at the beginning, and attempting to produce their own working rules. It gives the entire animation staff the opportunity to take advantage of every new method of achievement.

### B. Sources of information on animation methods and procedures:

1. Specialists among studio men.
2. Library of scenes.
3. Dope sheets.
4. Old pictures.

### C. Main considerations in story animation:

1. Simplicity and clarity.
2. Caricature: We should make action stronger than it would be in human life. Otherwise we are not taking advantage of our medium.
- D. There are no hard and fast rules in our studio - exceptions to everything.

### 11. Methods of animation:

A. Old method: Working from pose to pose. Holding one pose, called a hold or extreme, as long as possible, then inbetweening to the next one.

Advantages: Quick way to work. Generally told a good clear story if the holds were expressive.

Disadvantages: Unnatural action. Jerky.

B. Second method: Working straight ahead. Rather than drawing poses, as before, we'd take each part of the action as it came along, limiting ourselves only by dope sheet timing.

Advantages: Gave an overlapping, action that was smooth and showed an even timing. More natural action.

Disadvantages: Might be aiming wrong. Might get to main points in wrong positions. Development of idea that holds were not wanted, and a consequent skipping over of vital spots.

C. Present method: Combination of advantages of two previous methods. Putting in the extremes and then working straight ahead with the extremes as guides for the in-betweens. Elaborating or simplifying resulting drawings for caricatured action.

### I. General Primary routine:

- a. "Set-up" drawings (ones that tell the story)
- b. "Result" drawings from those, and all "anticipation" drawings, keeping in line with others.
- c. There is no action in the scene at that point but its essential parts are there, and the rest of the work is comparatively simple.

III. Scene Planning; - General routine. Scenes are planned from start to finish before animation is begun. The drawings are the expression of your thoughts. Timing, doping etc. all follow later.

Know the story and how your scene fits in it.

I. Study connecting scenes.

2. Character must not do anything that does not apply to the story.

- a. Simple walk across the floor should be done characteristically, as that particular character would do it, should be as direct as possible unless funny business is specifically called for.
- b. Audience should not be made to laugh in the wrong place, killing the build up of a later gag.

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### TECHNICAL PROBLEMS

The technical problems involved in animation scene building may seem secondary and unimportant but the scene is worthless until it is on the screen. It is essential that all mechanical details of the scenes are standard.

Please follow models when making up dope sheets and folders.

If you are in doubt about any technical problem call the checker.

Be sure your scene will work from a practical standpoint on the camera. Retakes are costly.

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### DOPE SHEETS

It is very important that all dope sheets be standard because of the great number of employees who are required to handle and understand each sheet. Please be definite when making sheets; DON'T LEAVE ANYTHING TO THE OTHER PERSON'S IMAGINATION. When changes are made, actually MAKE THE CHANGE. Don't merely add another note which will tend to confuse others working with the sheet.

Please follow instructions on model sheet as nearly as possible.

The main horizontal lines on the dope sheet represent feet or the division of feet. Always keep the correct footage in space provided at the top of the sheet.

### CELL LEVELS:

Four cells are used on the camera for most scenes and the number is never changed while shooting a scene. If an extra cell was added it would increase the density or darken the scene; for this same reason IT IS IMPORTANT TO CARRY THE MAIN ACTION ON THE SECOND OR THIRD CELL LEVEL AND NEVER, IF IT CAN POSSIBLY BE AVOIDED, CHANGE ACTION FROM ONE CELL LEVEL TO ANOTHER DURING THE SCENE.

### PAN MOVES:

It is always necessary to figure length of pan moves on dope sheets. It will be to your advantage in figuring to write down a sub-total about every foot or so. Put sub-total on line and circle it. Also write on dope sheet the total of each pan move. Besides being, a help to you, it will be a great help to the camera in getting your scene photographed correctly.

NEVER LET A SCENE LAY IDLE - MOVE IT ON TO THE NEXT DEPARTMENT.

### SLIDING CELLS:

In order to obtain desired results with a minimum of work and expence, sliding cells are used to move action in and. out and across fields. If an action is to move out of a field it will have to be followed with a blank end or field on a sliding cell. If an action is to come into the field it will have to be preceded by a blank field.

If an action is to come in, cross the field and move out on the other side, it will have to have a blank on each side of it, making it a three or possibly a four field cell. The reason for blank ends on the cell is to avoid having the edge of the cell move across the field, also avoid change in density.

#### OVERLAYS:

An overlay is an inanimate object or portion of the background behind which other action works. It can be on a still cell if scene is a still scene. If, however, the scene is on a pan and moves, the overlay will have to be a sliding cell. Always be sure to indicate on dope sheet the proper location for pegs when using sliding cell overlay.

#### CUT-OUT:

A cut-out, when finished, is a duplicate on paper, in painting, and detail, of the object that has been moving or is to move later on in the scene. It is pasted on the background when not moving or animating. Cut-outs are always given a number followed by an X: for example, 1X, etc.

The drawing is an ordinary paper drawing marked C.O. IX, or whatever number it is given. Always be sure to call for cut-outs to go on in proper place in case of pan backgrounds:- ie. if cut-out is to be on pan and come in, indicate same on dope sheet far enough in advance to give the cameraman a chance to place it down before that section of the pan is in the scene.

If it is necessary to have C.O. at any definite point on the pan, put a match mark on C.O.. drawing and background and call for the match on dope sheet.

(BE SURE THE OTHER FELLOW CAN READ AND UNDERSTAND YOUR NOTES)

### CAMERA:

The more common effects that can be obtained by the use of the camera are:-

#### MIX:

Cross dissolve or lap dissolve, abbreviated "Mix". In the case of a Mix both scenes affected must carry complete action clear through the Mix, with the footage divided as near as possible to the center. A Mix can be almost any length.

It is done by cutting the light down with the use of a lense iris in successive steps, from 100% to zero, on the scene going out.

The film is then turned or run back to the start of the dissolve and the new scene photographed on the same film starting at zero and going back to 100% in the same successive steps, per frame giving the film 100% light throughout, with one scene gradually fading out and the new scene gradually fading in to take its place.

#### IRIS:

The iris is a series of black cards or cells with round holes cut out or left clear in the center increasing in size from a very small hole, in uniform steps until the whole field can be seen.

This is photographed between the lens and the field.

The only thing the animator need worry about is tile length of the iris, and clear indications on the dope sheet.

If the iris is to be off center the point that is to be seen last should be given.

#### DOUBLE EXPOSURE:

If for example, a character or shadow is to be transparent the scene is photographed with all action on using only a part of the light or under exposing the scene.

Then the film is wound back to the point where the scene started and photographed over again leaving off the part that is to be transparent, and using enough exposure to get a, 100% exposure:- i.e. the transparent part is to be 50%. The scene is shot with all action on at 50%, then shot again at 50% with only part of the action and B.G. on. That part that is to be transparent is left off the second time.

DIFFUSION:

Diffusion is obtained by shooting, through a diffusion disc or lens. The effect is softness or out of focus.

FADING:

Fading is the effect of the scene dimming and going gradually out to black. It is done by gradually cutting the light with the iris or shutter.

TRACKING:

All movements of the camera are referred to as tracks. There is a given standard size field beyond which we are not permitted to photograph because of mechanical and lighting limitations.

The top of the field is referred to as North, the bottom as South, right side East and left side West.

(The camera can be set or tracked to any point from a 3" field to a 31" field.) There are two standard field grids - a 12" grid, and a 15" grid. It is important to specify which grid is being used. For example; if you are using a 10" field size, state whether it is a 10" field on a 12" grid, or a 10" field on a 15" grid, as the 12 and 15 field centres differ.

When indicating the field position to be used always give the reading of the center point: i.e. if the field is to be half of a field to the right, the reading would be -1/2E. - or if it moves to the right one complete field, it would be 1E.

LOCATING POSITION OF FIELD:

If you have a field drawn or outlined on a piece of paper the simplest way to find the correct reading, or location of the field, is to draw lines diagonally across it and place it on the pegs with a field chart; the point where the lines cross is the reading:- E - W - N - S.

To determine the exact size of an unknown field, match the cross line to the ones on the field chart and read the outside line.

Track up or away from field to increase the size of the field.  
Track down or closer to the field to decrease the size.

MARKING TRACKS or DOPE SHEET:

Be sure the proper field is marked on the dope sheet. Always in case of tracks, write on dope sheet the present field and the one to track to; i.e. track camera from 12F. to 5F.- 1.5W. At the point on the dope sheet where track stops write - Cam. at 5F. - 1&1/2W

## ANIMATION

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## REGISTRATION

15. If a character crosses in back of an object, which is on the background, how is this taken care of in the animation? What instructions and indications are given the tracers and the Background department?

Answer: By registration.

Register to B.G. (Generally all characters which are to be registered to B.G. the part to be registered is indicated with red pencil on the drawings and the area registered on the B.G. is circled with red pencil.)

16. What instructions are given the tracers when a figure on a lower cell crosses in front of a figure on an upper cell? How is it taken care of on the drawings?

Answer: Notes are placed on the scene folder that a certain group of drawings should be registered to another certain group of drawings.

Indication should be given on each drawing of the drawing it is to register to.

17. What instructions and indications are given the tracers when action is to go behind an object on the pan when the pan is moving? If the scene involved 4 cell action? If the scene is comparatively simple and includes only pan action and animation on one to 3 cells, how could the above problem be taken care of in a practical manner?

Answer: On drawings indication should be noted when the character is to be registered to B.G. and generally the part registering as it goes behind the object is drawn in red pencil. If less than four cells are used make an overlay of the object. This will save registering.

18. If the background starts panning to the right at 1/4" per frame, and if there is an overlay cell working with the background, how is it handled in regard to the tracers and also what notes should be put on the dope sheet?

Answer: Indicate on scene folder that overlay (O-No.) is used top or bottom pegs and type of sliding cell on which overlay is placed. Location of blank ends should also be given. Note on dope sheet that the overlay is to go in the direction and speed in relation to the pan.



19. There are some scenes, for example: parade scenes where it is necessary to use long sliding cells on which are traced several groups of characters in tandem or continuous arrangement. In other words, one group following another. It would not be convenient to animate such action on long sheets of paper in the same arrangement as it will appear on the sliding cells. This is obvious when you consider that such an attempt would be unhandy and clumsy and also that each group would consist of different characters and involve a different animation problem. Therefore, each group is animated on regular animation paper with pegs in normal position.

20. When a figure is working behind an overlay cell, how much of the figure would you require an assistant to draw and the tracers to trace in relation to the overlay.

Answer: About 1/4 inch more of the figure is required to draw in relation to the overlay.

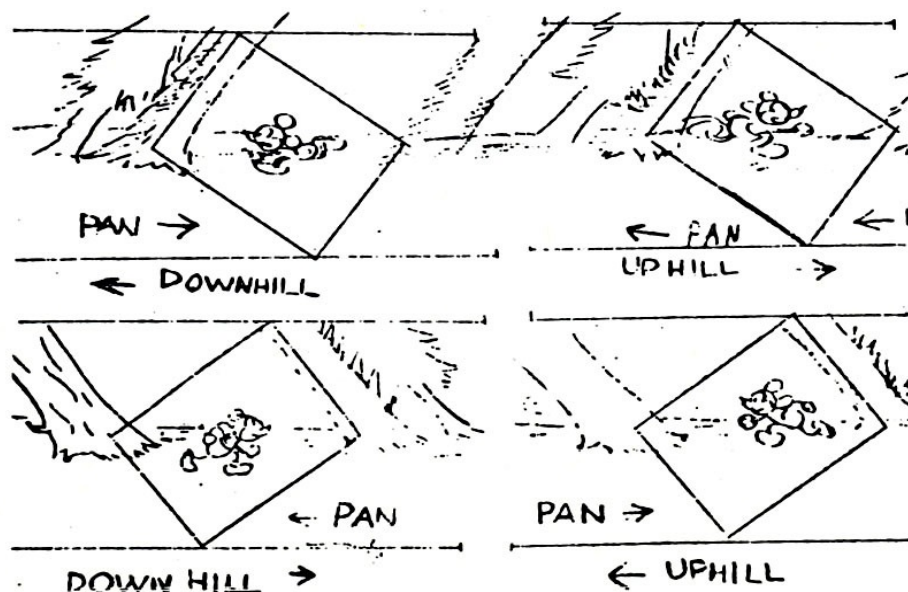
21. In a scene involving a character running up or down hill, how is the animation handled?

What kind of a pan is used and in what position are all upright objects on the pan drawn?

Does this kind. of a scene involve any change in regard to the camera?

Answer: UPHILL AND DOWNHILL PANS

All the action is not always right straight across the field, or straight up and down. Sometimes you want to go at an angle with the action. That is where we utilize uphill and downhill pans, accomplished by turning the camera at an angle. (See illustrative sketches below)



Turning the camera at an angle, pan movement to the right and the character faced left, gives the appearance on the screen of the character going down hill and to the left. Just the reverse angle on the camera - pan moving to the left and character going to the right, gives appearance of character going downhill to the right. The steepness or pitch you want your character going uphill or downhill determines the angle the camera must be turned to and the field size that must be used. When you turn the camera at an angle, then everything is drawn at the angle of that field to make the thing seem right. Not only will it seem right, but that is the way it will be. If trees were drawn in, they would be drawn parallel to the verticals of your field.

22. How is the pan handled in a scene which involves a character pole-vaulting; from the beginning of the run to where he lands?

Answer: Sometimes a horizontal pan is used. The camera field is moved up and down as the character leaves the ground and goes over the bar or a horizontal pan is used when the character places the pole into the hole and leaves the ground into the air; a vertical pan is used at that point and as he is about to land is replaced with the horizontal pan for still B.G., all depending upon the action used.

23. If a character running on a pan advancing as he runs with the pan moving at  $\frac{3}{8}$ " per frame, should drop a package he is carrying, what would you do with the fallen package? What notes would you put on the dope sheet and on the folder?

Answer: As the character drops the package animate it a little faster than the pan movements along with pan. Should it come to a stop place it on a cut-out. Indicate on folder - cut-out, (X-No). Indicate on dope sheet on what frame cut-out should be placed on B.G.

24. How would you handle it if he dropped a rubber ball which bounced into an ash can on the background instead of the package?

Answer: Animate the ball falling, hitting the ground a little faster than the pan movement itself and if it bounces into an ash can on the B.G. register the drawing to the ash can until the ball is completely in it.

25. How would you handle the following problem in order to make the least amount of work for yourself and the tracers.

A character is running on a pan. On the pan there are three trees which are at some distance apart and the character must run behind them. Assume that it is necessary to keep the trees on the background. The character is always in the same position in the field.

Answer: Animate character in a cycle run and if trees are evenly spaced apart register drawing to first tree as it passes then allow same drawing to register with other two trees as pan moves. (Adjust the trees on the B.G. so the part of the tree to be registered would be exactly the same as the first tree.)

26. How would you handle the background to create the illusion of a character walking towards the audience? Assume that the character is the same size throughout the action and that he is animated in a cycle walk.

Answer: Animate the background to fit a cycle walk.

27. How would you handle the background to make him walk toward the audience, turn a corner and continue walking toward the audience?

Answer: Use an animated B.G. as character walks toward the audience and turns the corner, then switch to horizontal pan providing the character goes any great distance, then back to an animated B.G. Animate the character in a cycle-walk as he again goes toward the audience.

28. How would you handle the same problem as the above except that the character would walk toward the audience, turn a corner and then be in a horizontal position and continue on in simple pan action?

Answer: Animate the B.G. as the character walks towards the audience then as he turns the corner, switch to a horizontal pan and animate cycle according to pan movements.

29. How many kinds of pan are there? What is a repeat section and what is its use?

Answer: 1. Horizontal pan. 2. Still B.G. 3. Horizontal-vertical pan. 4. Vertical pan. 5. Animated pan.

A repeat section of a pan being about 12" long is identically the same as the first 12" section of the pan and is used when a certain length pan is required to be repeated when any great distance is being travelled.

30. What indications are put on the background sketch by the animator or his assistant for the background Department?

Answer: Position of cut-out used.

Indication in red pencil of any registering which might be made.

Various pan movement indications.

Overlay indications in blue pencil.

31. What is the folder for and what directions are written on the same?

Answer. Folder notation is the guide for the tracers and painters in aiding them to trace and paint scenes giving information required for them to know. It also gives the Inbetween Department instruction.

(SIGN THE FOLDER WHEN SCENE IS O.K.)

37. Where in relation to the pegs is the guiding edge (bottom) of a horizontal pan placed?

Answer: It is guided by the bottom round peg and held with clips on both sides.

38. What are the purposes of the vertical and horizontal marks on your drawing board?

Answer: Used for registering position of pan movements both vertical and horizontal.

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IMPORTANT.ASSISTANT ANIMATOR QUALIFICATIONS AND PROCEDURE.Qualifications for Assistant work. (An organised mind.)

The top class assistant must be a combination of a good business manager and a potential animator. It is possible that a man can become an animator and not possess the business ability to be an assistant, but he will have a much more difficult time in reaching the top than will the good manager. By this it is not meant that thorough knowledge of the technical aspects will make him animate more easily - it goes deeper than that. It naturally follows that the men who possess business ability possess an organised mind, and an organised mind is vital and necessary in the creative end of animation; for it is the ability to be so organised and in possession of a plan so that importance is not misplaced in putting over the meat of a scene, that gains the animator the dependability necessary for the assignment of important work. In brief, the prime work requisite for an assistant animator (as well as a top notch animator) is that he have an organised analytical mind with a background of sound animation training. Success in any higher specialised business demands ground work training knowledge of the fundamentals of that business. Animation is now a specialised business and it is but common sense to expect its leaders to have more than talent. (An ability to analyze)

Necessity for possession of animation ability.

The need that the assistant be a potential animator is very important, for the assistant rather than being an "assistant to an animator" can be literally an assistant-animator. The animator should be able to turn over to him minor corrections or changes in animation. The assistant should be able to relieve the animator of animating all but the basic essentials of the scene.

THE REASON FOR RULES AND PROCEDURES.

We would not expect each man to be a pioneer in assistant work, therefore we have compiled the experience of many men working over a long period of time in the form of "rules" and "procedures". Naturally those change from time to time as we progress and are augmented as we find better ways of doing things, but always they form the basis of good management. It is the application you make of these rules that will make your work easy or difficult, and remember this - there is not a problem in existence relative to the management of the assistant animator's work for which the basic solution is not listed in the pages to follow.

ROUGHES: How far to carry; what to emphasize.

Let's take a theoretical scene and follow it through to see the general rules and application: The assistant's first contact with the scene may come as rough in-betweens providing their difficulty warrants his doing them. Usually, however, to assure the best result the animator must go far enough in his roughs so that what is left is only simple in-betweens. Should you be called upon to do rough in-betweens or if there is animation in the scene which you must do - (quite as a general rule clothing and drapery will be put on by the assistant over the animator's rough framework) - remember that the rough is the basis of the best final results which can be achieved - from the action standpoint you must animate into the roughs the entire foundation for what you want to see in the finished scene. Detail on which the presentation of the action definitely depends should be roughed in, but the rough must not bear anything that is not essential. From the drawing standpoint the rough should be in correct proportion. The large masses especially should be roughed out in correct proportion to each other. Relative size of one character to another should be accurate.

Chart of location of scene: Preparation of tests.

The next step after rough in-between will be the test. (In order that you do not have to develop a prodigious memory you should keep a chart of the location and condition of every scene, on which each step can be recorded as it occurs) The preparation of rough or clean-up tests is the same and follows the procedure outlined in Chart No. 2.

SCENE PLANNING: Simple plan of approach.

There is one thing that should gain your attention at this time as well, that is the planning of the scene from a mechanical standpoint. Practical planning at and prior to this point will keep unnecessary cost out of your work in all of the departments. Economise on drawings wherever that economy will not detract from the screen quality of the work. There is a very simple guide to the planning of every scene which calls for you to but do two things, first, learn how the camera bed is constructed, second use the checking sheet as a guide. There are a few other items which but call for common sense in avoiding, such as a scene being animated on seven or eight sets of paper requiring an in-betweener to trace it on to two or three for test purposes; skipping haphazardly from one part of the scene to another thereby increasing the danger of jumbled types of handling, numbering in complicated manners where simple numerical sequences are possible.

Know your character.

Whether it appears so or not in the scene draw the character from every conceivable angle so that you know it. Remember that quality of line does not make a good drawing - depth, solidity, expression, simplicity are the determining factors - to get those qualities you must take advantage of the detail and construction lines which will bring out form. The qualities that make for good drawing are the fundamentals and not hard tight drawing.

Fitting to Background: Provision for incidental animation.

Check the background perspective and see that your characters fit the planes in which they are working. Check on details and colour separations on your characters with layout men, colour department and other animators handling the same character. See that all incidental animation - effects, background action, etc., is provided for.