

# DRAWING ESSENTIALS

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*Photography* and *drawing* serve different purposes. On the one hand, *photography* captures everything that the camera sees in the specific and unique moment in which you have the specific and unique subject in front of you. *Drawings*, on the other hand, illustrate only the necessary: you can omit, clarify, emphasize, select important things, summarize what you see in many organisms and draw things inside your subject (Wood, 1994). You can also integrate information obtained through different planes of focus in a microscope. Most important, drawing forces one to *look closely and pay attention*.

In this class you will be drawing many different marine organism present in the San Juan Island. You will learn how to identify the most common species, understand their relationships, ecology, form and function. In this process, learning to take notes of visual information (drawing) will be essential.

## **WARNING: OBSERVE YOUR ORGANISM CAREFULLY BEFORE DRAWING!**

Try to understand what is happening in front of your eyes, so you can choose the correct way of representing it.

### **The Basic Steps of Drawing**

- Observe first and think about the best way of capturing a good (useful) image of what you are seeing (frontal view? lateral view? dorsal view? etc.).
- Measure proportions of your object with the help of the ocular micrometer (is the width of that clam twice its height?).
- Do a vague outline of the general shape of what you are drawing. Then start working on more specific details. At this stage, try to forget what are you drawing and just think in spatial relationships, like: “there is a big sphere here that is connected to a tube that is half of the diameter of the circle... ah! ...there is a line that intercepts the middle of the tube”. This will make drawing easier, less intimidating and more accurate.
- Start labeling structures with the help of guides, books, professors, TAs, etc.
- Go back to your object to check for structures that you notice (in a book for example) that should be there. Are they really there in your organisms?
- Write everything that you think is important (what color is it, movement, smell, etc.)

### **Things to include in each of your drawings**

The drawing is a *reference to you* and you should include enough information in it to allow you to come back to it many years later and know what you were seeing. So the following information is useful to include:

- Name of the species.
- Day and time.
- Localities where you collected the organisms and any notes of the organism in the field
- The drawing (of course!) and labels of the main structures. Indicate if you are seeing a dorsal/ventral/lateral view (just to let you know: by convention in scientific illustration dorsal and/or anterior parts go up or to the left side, but we are not too picky about this in this class...as long as you know where they are and you indicated it).
- Scale and any other measurements that you want to show in your specimen
- Observations about movement, color, etc, etc, etc.

### **Drawing tips**

- YOU DON'T NEED TO BE AN ARTIST TO LEARN HOW TO CAPTURE VISUAL INFORMATION. If you are one of those people that claim “I can't draw”, this is the moment to challenge your statement. In this class we are not looking for stylized art but for drawings that capture accurate visual information, drawings which will train you to look carefully to a biological subject and understand it. Drawing what you

- USE THE SPACE IN YOUR NOTEBOOK. It is easier to work in bigger drawings as you can always include more visual information. But don't try to make larger drawings than your hand comfortably moves across; find a happy medium between postage stamp and full page.
- DRAW IN PENCIL. You will need to erase or correct your drawings while you are working on them. If in the future you realize that you misinterpreted or failed to draw a structure correctly, put a note next to that drawing explaining your new observations and do a new drawing. Don't erase your first drawing! This is why this is a "notebook" and not a "book".
- "ZOOM-IN" when you need more detail in a particular area, when your drawing end up been too small for showing a structure or when you think that more detail will help you to show a point you want to make.
- WORK MAINLY IN BLACK & WHITE. Especially when you start, it is easier to just work in B&W as you will pay more attention to the structures and their relationships. Adding a simple note describing the color and how translucent (or not) is your organism is, most of the time, all you need. If at some point you really think that a particular structure needs to be colored, then do it, but try softly at first.
- DON'T SHADE! Most of the time you don't need to shade your drawing to show what you want to show (like a 3D effect). Most probably, if you try to shade you will cover some structure that you have drawn before or you will not have enough contrast to draw something else on top.
- TAKE MEASUREMENTS as you draw. Don't be afraid of measuring proportions or length of specific structures. It will make your drawing more accurate.
- USE DOTTED LINES to indicate a structures that are behind something, or you can see because the organism is translucent. Other way of showing this is by use thinner or more faint lines.
- DON'T DRAW EVERYTHING WITH THE SAME DETAIL! You don't need to (and can't) draw every cell in an organism. Most of the time, if you try to do so quickly, without drawing the exact structures the result is inaccurate. Which brings us to...
- DRAW WHAT YOU SEE! As you might have noticed by now, you can make up visual information in your drawing. So draw *only what you see* and NOT what you are supposed to see.
- As Einstein said: "Things should be made as simple as possible, but not any simpler". Do the same with your drawing.

### **Some Reference Material**

The following are books on "scientific illustration" that are especially good for theory (perspective, light, and color) and techniques (pen & ink, carbon dust and so on) in case you have further interested in the subject.

Hodges, E. (2003) *The Guild Handbook of Scientific Illustration*. Second Edition. John Wiley & Sons. Pg.623. (THIS IS THE BIBLE OF SCIENTIFIC ILLUSTRATION)

Wood, P. (1994) *Scientific Illustration. A guide to Biological, Zoological, and Medical Rendering Techniques, Design, Printing and Display*. Second edition. John Wiley & Sons, INC. pg 158.

Zweifel, F. W. (1988) *A Handbook of Biological Illustration. For the Biologist who is not an artist and the artist who is not a biologist*. Second Edition. The University of Chicago Press. Pg 137.