

# DESIGNING AND ANIMATING BIRDS FOR BEGINNERS

By Manal Hassan

# **Designing and Animating Birds fundamentals Notes for Art Students**

## **(Focusing on The Sparrow)**

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### **ABSTRACT:**

Birds are very important element in the animation world. They can reflect a lot of expressions and emotions with no talking but only with their body language. The world of birds contains more than millions of kinds and every kind has its own character in form and expressive movement. In this paper a try to give a process of thinking when approaching designing and animating birds specially The Sparrow. The sparrow is almost a common bird with a cute body form which affects the character design to have more innocent appearance and expressive features. By following these notes much successive results could be gained because they depend on life observation and study beside some references are been investigated to come out with a simplifying conclusion. The process divides to three sections: the study, the design and the animation notes. Every section has steps or points to be followed or considered during working. On the graphs provided there are some training suggestions to fulfill the target of each section and steps.

**KEYWORDS:** animation notes, simplifying birds, sparrow observation, movement design.

### **1. Introduction**

Unless the birds as a subject is very interesting one, it's not so easy to get involved with. Studying birds has to accompany with a strong base of life observation to guarantee getting successful results. To design or animate birds, the understanding is the main target should be done carefully. The concept of this paper is applying the design thinking and creativity process to achieve the concerned objectives in a simple method for any design student specially the beginners. The objectives here are: giving a manual to teachers or independent students about study, design or animate the birds as an important creatures in our life. By showing an experienced try, anyone can get the given information easily specially when it's accompanied with illustrated drawings done during the study. Conveying that any study should be based on understanding and sensing the subject to know how to identify it in simple and expressive way.

### **2. Methodology**

First doing a good study for the birds anatomy in general focusing on the sparrow from references. Then drawing with understanding by writing analysis notes on the illustrations which been simplified. Gradually led to the design step and the animation basics and notes to be considered. Some illustrations done during the process to explain the steps effectively.

### 3. The study Notes



Fig.1. Anatomy construction study. Fig.2. Building the form on the skeleton. Fig.3. Adding the details.

**First step** the anatomy construction should be studied first to understand what is lying under and causes the external shape of the bird (Fig.1) according to "Laws" as he stated [3] : when I am drawing I look more closely and ask and answer questions that I would not have considered if I was just watching. In that sense, drawing becomes a way to interact with the birds, and drawing leads to understanding. So in order to get that, the artist should observe like an explorer searching for the substantiality in the bird body and movement.. **Second step** is investigating the previous observations and understanding how they take place in the bird form and appearance (Figs.2,3). The two previous steps may be applied by drawing sketches and writing notes and may studying some parts closely. **Third step** is to lay down these results of studying in some basic shapes and maybe colors without any distracting details to avoid losing consistency and solidity of the form. **Fourth step** is to find the details gradually without breaking or weakening the previous form drawings. There is an illustration from a video made to show simple steps to draw the sparrow for beginner students (Fig.4).

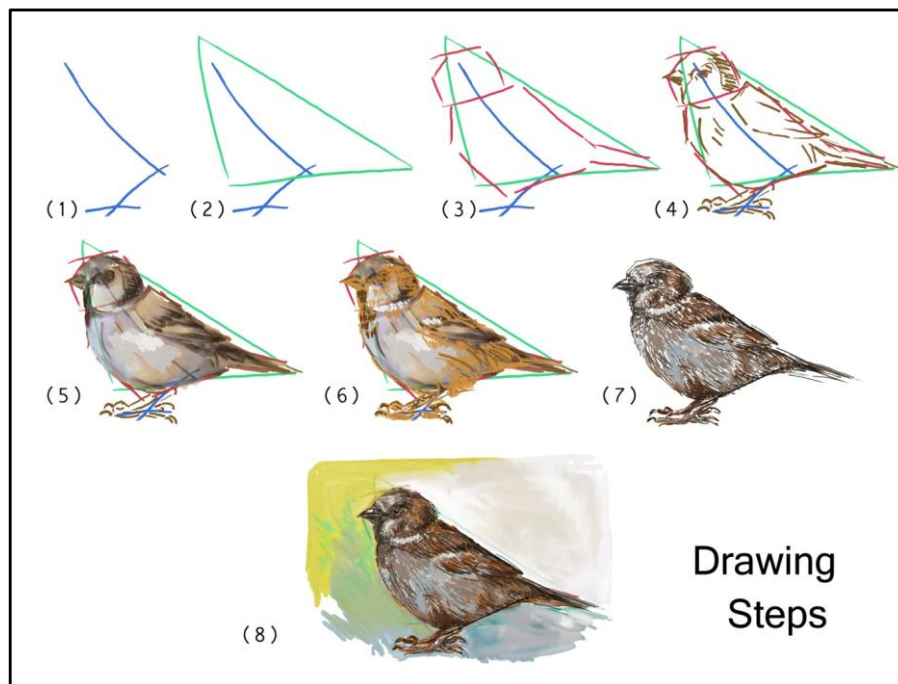


Fig. 4. The drawing steps based on understanding the concept of the bird.

#### 4. The Design Notes

**Step 1:** finding out the uniqueness of the bird by closing eyes and trying to remember the most characteristics which identify it quickly. **Step 2:** lay down what has been remembered and give it some exaggeration to make an effective impression (Fig.5). **Step 3:** repeat step 2 by applying some variations to express and simplify lines, shapes and forms (Fig.6). **Step 4:** chose from these suggestions what goes with the concept successfully.



Fig.5. Modifying the character.

Fig.6. Applying some exaggeration with simplification.

#### 5. The Animation Notes

Having the movement observations from the study stage should give the animator a good idea about the concept of the movement mechanism and rhythm. Then comes the step to simplify this movement and design it to be logic, attractive and clear. Here are some notes on the movement behavior: **(1)** During a flying cycle, generally the upstroke and the down-stroke take about the same time, although with larger birds at least, the down-stroke is slower as mentioned by "*Whitaker and Halas*" [6] . The length of the repeat depends on the size of the bird. On the whole a large bird moves more slowly than a small one. For example, a sparrow may make twelve complete wing beats in a second, whilst a heron or a stork may make only two [6]. **(2)** It may not be noticed when the sparrow take off because it is so fast considering its light weight. **(3)** As mentioned by "*Goldfinger*" numerous neck vertebrae (number varies by species) provide great neck flexibility [2]. The sparrow can turn its neck in different angles in sequences but sometimes it turns its light body to see everywhere. **(4)** It moves quickly with a lot of jumping all around the place. **(5)** Its movement varies between small jumps, running and sudden flying or landing. **(6)** It seems from the movement behavior that the sparrow is enjoying being a light weight creature by doing a lot movements in a very short time. **(7)** It keeps balanced by changing the chest and tail positions based on the legs. **(8)** The chest leads the movement. **(9)** It's so sensitive and reacts to any slight sound or movement. **(10)** According to its small body, the whole body reacts during making any sound.

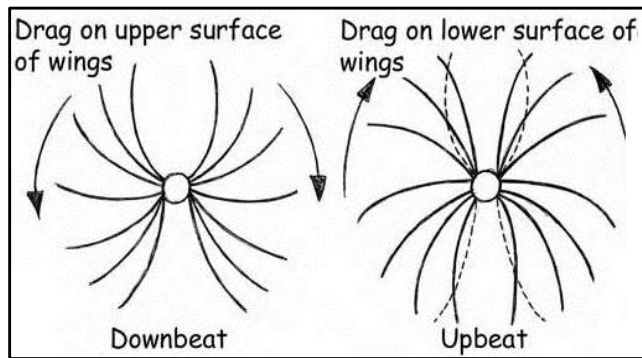


Fig. 7. Wing action in flying cycle [6].

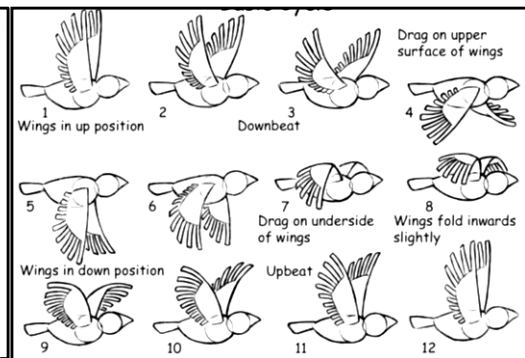


Fig.8. Wing shape in flying cycle [5].

### 5.1 Flying

As the flying speed varies from a bird to another; two things should be considered in the flying process. First, notice how the movement of the end of the wing tips drags behind the main part of the wing (fig.7). Once a change of direction occurs in the wing the wing tip will continue, for a short while, to move in the original direction [5,6]. Second, birds' wings have four basic patterns of movement during flying: Flutter, reverse, swing, and folding. "Flutter" is an angle movement around the axis with a same direction of flight; "reverse" is an angle movement around wings centre line; "swing" is an angle movement around machine's vertical axis (wings are parallel with machine's body and swing back and forth during flight); "folding" is stretching and bending of wings along the direction of span [1,4,6]. (fig.8).

### 5.2 Take-off

To take off the bird should anticipate first. Various birds need to adopt different strategies in order to take off to the air. Ground-feeding birds such as sparrows and pigeons jump into the air to gain momentum, while swans need to take off from water by running along until enough speed is gained in order to achieve lift-off [5]. (fig.9)

### 5.3 Landing

On landing a bird needs to do almost exactly the opposite of the take-off; it needs to lose air speed [4] (fig10). The sparrow landing gives the feeling of falling or high jumping as it is so fast.

### 5.4 Moving on the ground

The sparrow makes some quick movements on the ground vary between jumps and short flyings to move from a place to another accompanied with a lot of movement of the head on different angles during its quick stopping.

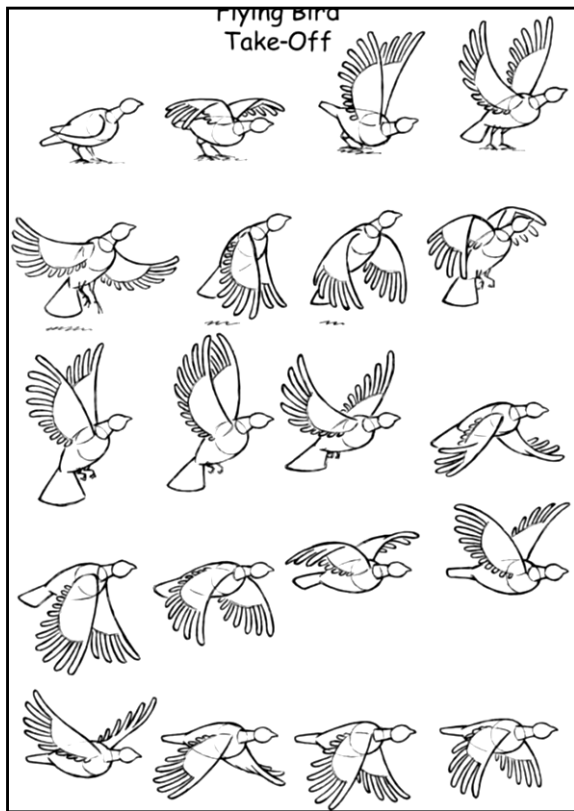


Fig.10. Landing

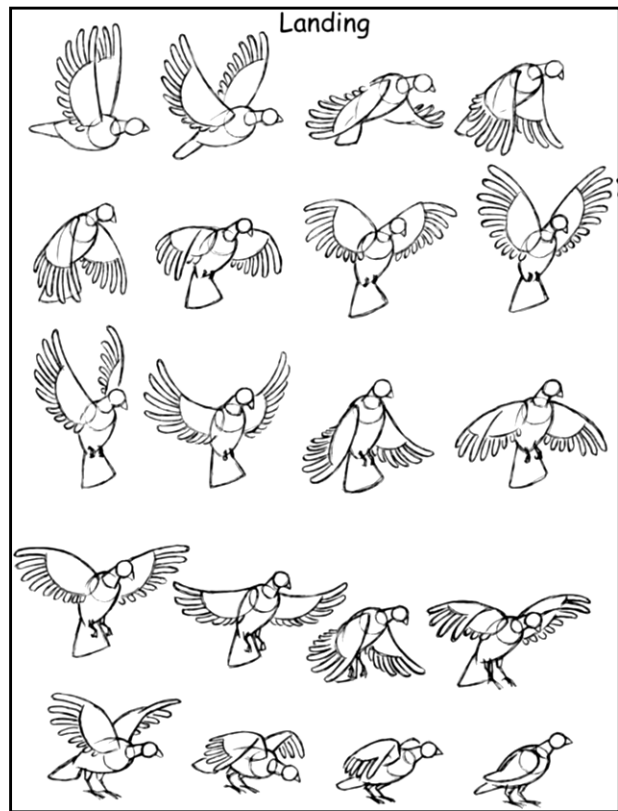


Fig.9. Take off

## 6. Discussion:

From the process which has been followed in this study noticed that: Studying with analysis leads to good understanding for the subject. That is the key to generate more ideas and create a successful design. Looking for the most characteristics features and focusing on them identifies the subject easily. Following organized steps helps achieving good results with saving much time and effort.

## 7. Conclusion:

From studying the birds specially the sparrow, there are some observations may be considered in the design and animation process. It is all about the balance of the body in form design or in animating it. The chest and the tail are responsible for keeping that balance. There is a high flexibility in moving the bird head and wings should be achieved in the animation. The sparrow movement behavior is not smooth but fast which leads to do much movement in short time for the animation.

## References:

1. Blair, P., 2005. *Cartoon Animation*. California: Walter Foster.
2. Goldfinger, E., 2004. *Animal Anatomy for Artists-The Elements of Form*. New York: Oxford University Press.
3. Laws, J. M., 2012. *The Laws Guide to Drawing Birds*. First ed. New York: Library of Congress.
4. Liang, B. & Others, 2011. *Canadian Center of Science and Education*. [Online] Available at: <http://www.ccsenet.org/journal/index.php/mer/article/view/13944> [Accessed 11 2016].
5. Webster, C., 2005. *Animation The Mechanics of Motion*. s.l.:Focal Press.
6. Whitaker, H. & Halas, J., 2006. *Timing for Animation*. U.S.A: Focal Press.