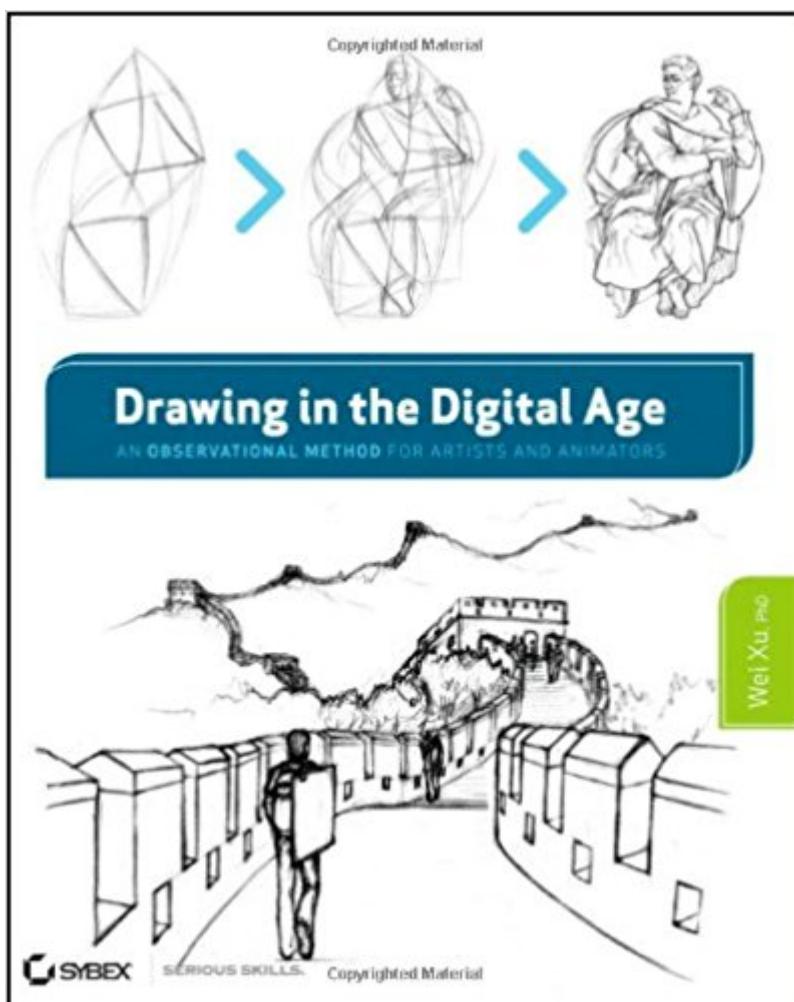


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# Drawing In The Digital Age: An Observational Method For Artists And Animators



## Synopsis

A solid foundation for improving your drawing skills Teaching a new observational method based on math and computer graphics principles, this book offers an innovative approach that shows you how to use both sides of your brain to make drawing easier and more accurate. Author Wei Xu, PhD, walks you through his method, which consists of scientific theories and principles to deliver real-world techniques that will improve your drawing skills. Xu's pioneering approach offers a solid foundation for both traditional and CG artists. Encourages you to use both sides of your brain for drawing with the highest efficiency possible Introduces an innovative method invented by the author for improving your drawing skills If you are eager to learn how to draw, then this book is a must read.

## Book Information

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## Customer Reviews

Use Basic Math to Become a Better 3D Artist Despite the sophistication of today's computer graphics software, if you want to become a professional 3D artist, solid drawing skills are essential. With a good foundation in drawing basics, you'll be better equipped to create the more realistic characters and environments that today's film, game, TV, and video markets demand. Using an exciting new drawing method based on simple math combined with established computer graphics principles, this book shows you step by step how to draw quickly and efficiently in a digital world. Find out how math can help you draw Master the six techniques of the Angle-Based Constructive (ABC) method Learn how to see, including how to extract shapes from a scene Review basic CG

concepts, principles, shapes, and structures Discover hidden patterns, draw simple objects, and assemble them Learn advanced techniques, such as how to use curved shapes and shadow maps Draw the human body—find several tricks to make the job easier Explore the tradeoffs between accuracy and speed

Wei Xu, PhD, teaches game programming and production, 3D math, and life drawing at the Art Institute of California—San Diego. He also teaches iOS game programming and drawing classes at University of California San Diego Extension. He is cofounder of Geomy Entertainment, LLC, a game-consulting firm. Xu was previously a lead engineer at Sony Computer Entertainment America for game technology R&D and a senior CG software engineer at Schlumberger Austin Technology Center.

Sharing a similar professional background as the author, I was really looking forward to a scientific take on drawing instructions. Many pages are spent reviewing the state of the art in traditional drawing approaches. This works well for a scientific paper, but here it would have been more worthwhile to describe the new approach instead of criticizing traditional art instruction. Even more pages go towards a computer graphics primer; if you have a CG background that information is trivial. If you do not then the material is probably too complicated but at the same time also unnecessary for the practice of drawing. After reading about half the book I was hoping to finally learn what the precise steps are for this new drawing approach. In fact the author acknowledges that the reader at this point is probably eager to pull out a pencil and start practicing but then this is followed by more theoretical discussions. Eventually we reach the chapters where specific types of objects and settings are discussed with some tips & tricks on how to improve drawing in these special cases. It felt like jumping from a lot of theoretical background into an advanced section of practical application, with no introduction of the practical basics of the author's approach. A simple way to remedy this would be adding another two or three chapters in the middle of the book discovering the precise steps for drawing a simple scene (e.g. step 1: find largest contour, step 2: find markers with near orthogonal lines, step 3: draw first marker and transfer angle measurement, etc). Perhaps this book is a helpful refresher if you have taken one of the author's live classes, but just from reading the book I was unable to figure out exactly how his drawing approach is supposed to work.

Xu takes the voodoo out of art. He demonstrates methodology and work flow that enables the artist

to better see where things go, how things fit. He doesn't talk about feelings or how a line is alive, but rather talks in terms of sequence, iteration, decision, and intentional abstraction and generalization to organize thinking and tasks. He shows how to simplify the complex and how to refine the simple. He uses the methods of mathematics and computer science to show how an artist can solve spatial problems. While he wastes some time at the beginning using mathematics to defend his position, the application of it that follows is pure gold. Xu's very special skill is clarity and simplicity in explaining his thinking. Good pool players play good pool, but few (if any) can clearly explain how they do it. I am a fair pool player but I hit a point where my game was not improving. Then I stumbled upon edge-to-edge aiming and pivoting that allowed further improvement. What is interesting about all this is that the presenter of these techniques "re-discovered" them by carefully observing eye and body motions of professional pool players and interpreted for the rest of us what he thought was actually taking place. In a similar fashion, I believe that drawing methods are often not clearly explained. My favorite example of this is seeing five lines and then next seeing a finished product and you are left thinking "how did THAT happen?" Xu is an artist that has a background that is all about defining structure and process. He uses his cross-discipline knowledge to demonstrate the problems that need solving and how they are solved. In short he explains what takes place (probably on an intuitive level) between an artist's ears (assuming they haven't been cut off yet). He demonstrates that drawing is an engineering task that benefits from a certain degree of hand-eye-coordination, yet does not require super-human hand-eye-coordination. Xu exposes the seeing, the organizing, and the execution of drawing. Xu's language and writing is clear, concise, well ordered, a joy to read and very much appreciated. Xu intentionally documented a workflow that involves only pencil and paper, and I am sorry that he didn't explore more deeply using tools/software like photoshop or painter layers. He did after all use the digital word. My first drawing using these techniques was awful. But it was good enough that I could see some things that I did right. I could spot tangible/fixable problems. This is a massive step forward for me and I thank you for this Wei Xu!! Practice, practice, practice, they say. Well, it is wonderful indeed when you are given something to practice that improves your skill. It is a wonderful feeling to be able to make progress "to improve. This book gives you that. So, after all this inane rambling, what's the point? Get the damn book - you won't go wrong.

As one of Dr. Xu's art students, I can attest that this book is filled with insightful and helpful tricks on how to draw better in terms of accuracy and efficiency. Before taking Dr. Xu's class, the way I drew was similar to the contouring method (a.k.a. outlining), which is only a test of how good your

hand-eye coordination is. It's just as difficult as, if not more difficult than, writing without looking because it's easy for your hand to wander off course without you even knowing. You don't have any markers to help exactly pinpoint where each point is, so you can only estimate the size and location of everything. If it turned out looking horrible for me, the only thing I could do was erase everything and redo the entire outline, which was so time-consuming that it would take me two hours to try to draw one good-looking apple. I also used to have a tendency to immediately jump to perfecting the details, instead of focusing on the big picture before gradually adding the small details. As it is with most things, it always worked at first in the beginning, but when I kept on drawing, everything was out of place and out of balance, and the worst part of it all was I had no way of correcting it without erasing everything. So, I struggled to achieve the accurate proportions, perspectives, and relationships, and as a result, my drawings lacked quality and finesse. For instance, whenever I drew a portrait, I had trouble making sure the eyes and the nose and every component were all scaled and positioned correctly because I had no effective or efficient method of approach. Even when I tried fixing one part, another problem would just appear, and suddenly, it became this chain-reaction of problems that never seemed to end. Even though, I always tried my best on my drawings, those small mistakes and flaws here and there always accumulated much more quickly than I anticipated, and soon enough, my drawings looked absolutely atrocious. You can imagine how frustrated I must have felt, stuck at this standstill, unable to improve because my toolbox was only limited to the contouring method. That is, of course, until I enrolled in Dr. Xu's class. Dr. Xu taught me that the key is to control the Degrees of Freedoms (DOF), systematically instead of individually. It makes perfect sense from a geometric point of view, and it explains why drawing can be so tough, as it was for me, if no scientific approach, like the contouring method, is used. During the seven-week course, I learned Dr. Xu's ABC method, as well as other various techniques that deal with using angles and scientific principles to control DOF's without using any measurement tools. I learned to draw with layers, perfecting the basic structure first before working inwards towards the more detailed aspects in order to achieve a more refined and accurate overall end result. And now, I no longer have to use the outlining method because Dr. Xu and his book have generously given me a wider range of tools to work with. With these new tricks, I can now draw objects much more accurately and much more efficiently, whether I'm drawing a simple cartoon picture of Mickey Mouse or a real, complex, 3-Dimensional human body. With Dr. Xu's techniques, the drawing process is simplified into a step-by-step procedure of assembling basic shapes, where you control more and more shapes as you advance further on in your drawing. Ultimately, it's all about seeing everything, no matter how complex it is, as not an irregular figure, but a composite figure that you

can easily deconstruct into elementary shapes, like triangles, rectangles, and circles, that we all know how to draw. You might think that Dr. Xu's scientific method is too difficult and intricate to learn because of all of the fancy mathematical principles involved. But in reality, it's much simpler than the mind first perceives it to be. If middle-school students can quickly master it (as in the seven-week course Dr. Xu offered at the UC San Diego Extension), then anybody can do it. Give it a try because the best part of it all is that as long as you can draw points and lines and measure angles, you can pretty much draw anything.

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