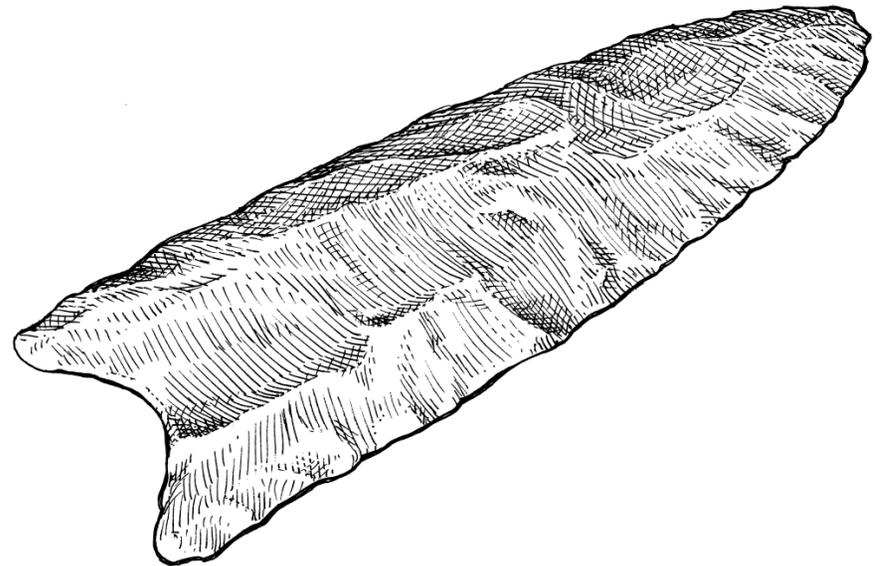


Aesthetics of Hand-Drawn and Computer-Generated Illustrations

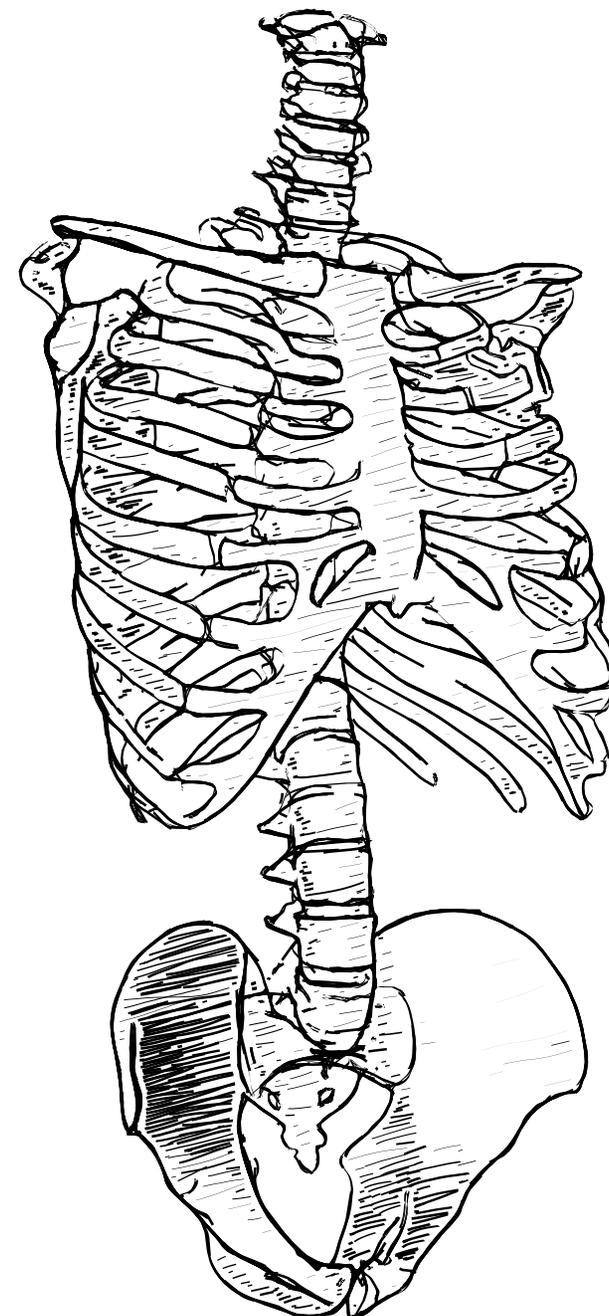
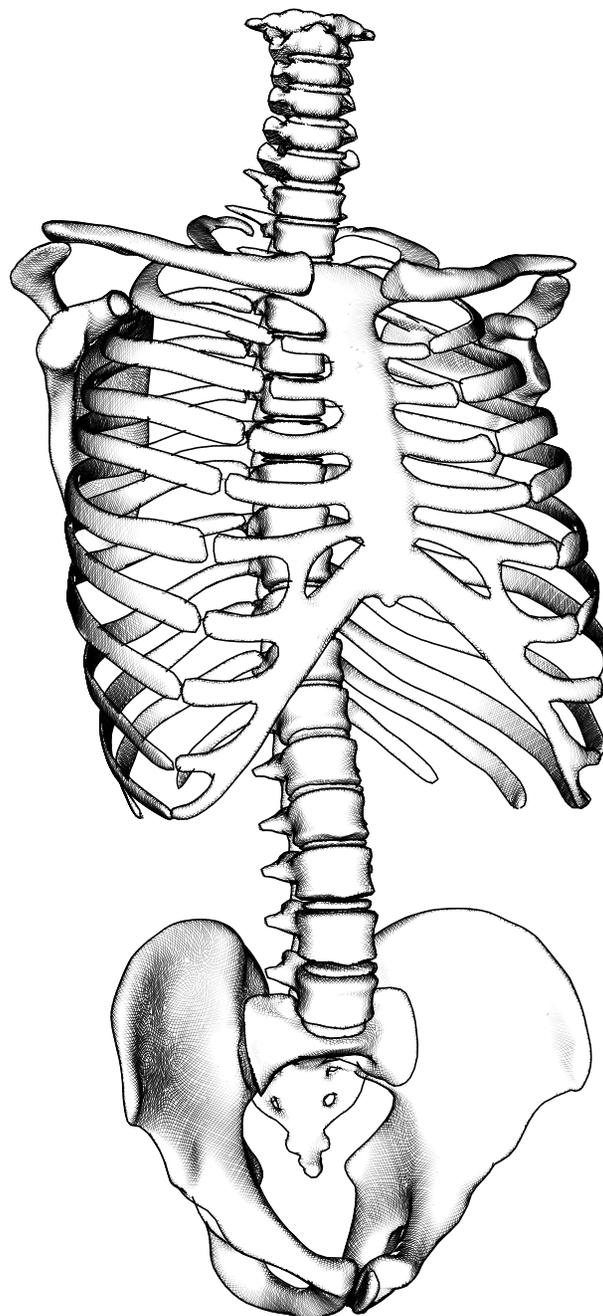
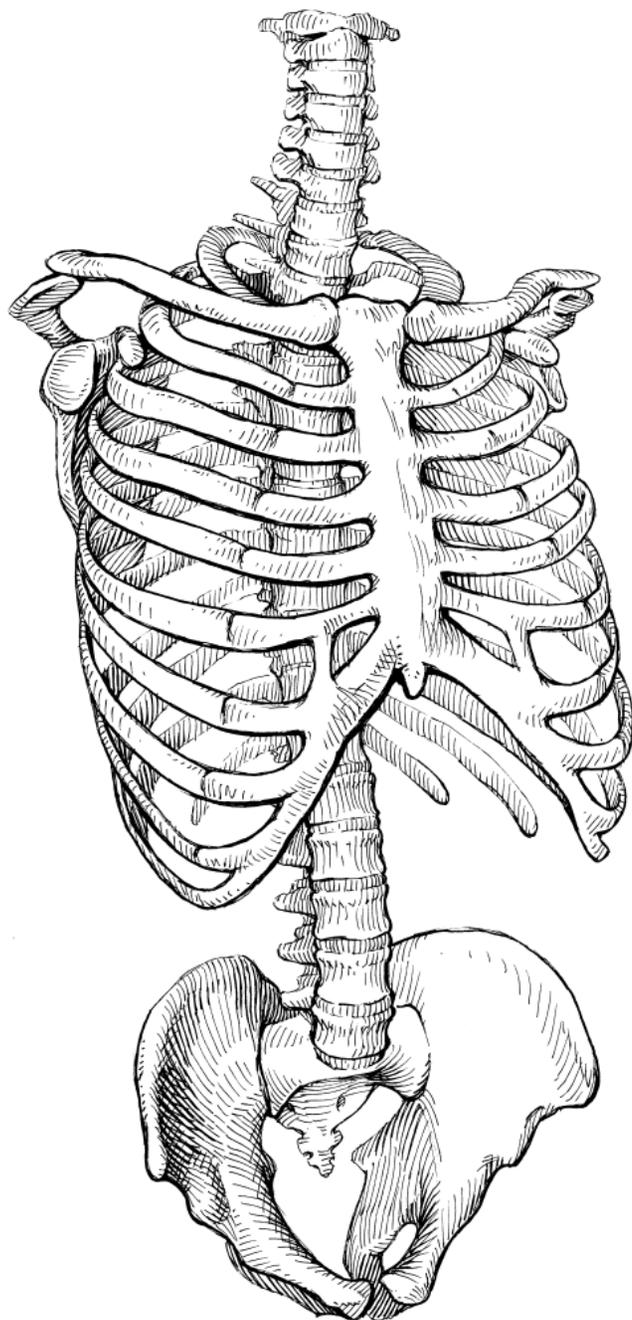
*Tobias Isenberg
Petra Neumann
Sheelagh Carpendale
Mario Costa Sousa
Joaquim A. Jorge*

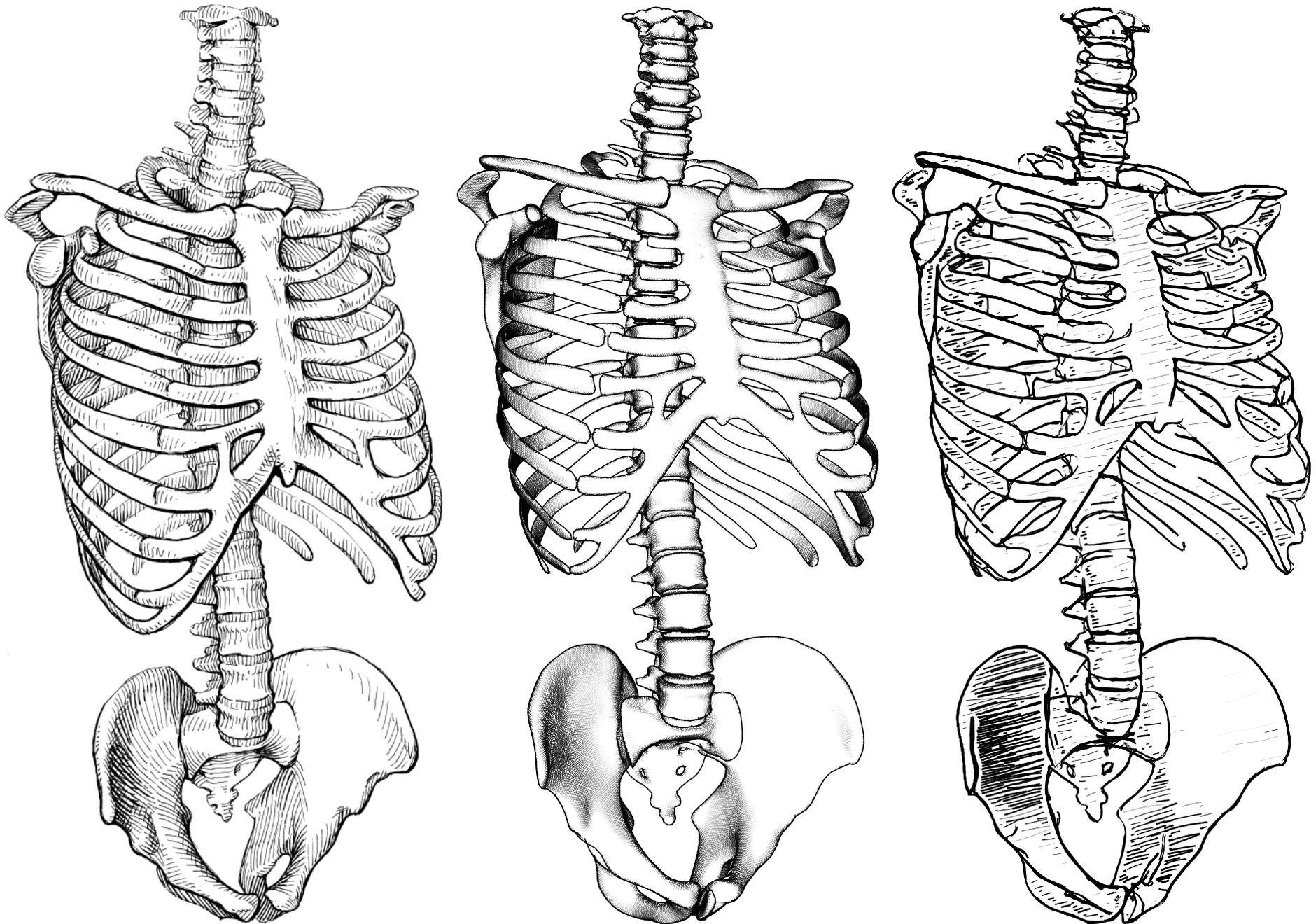


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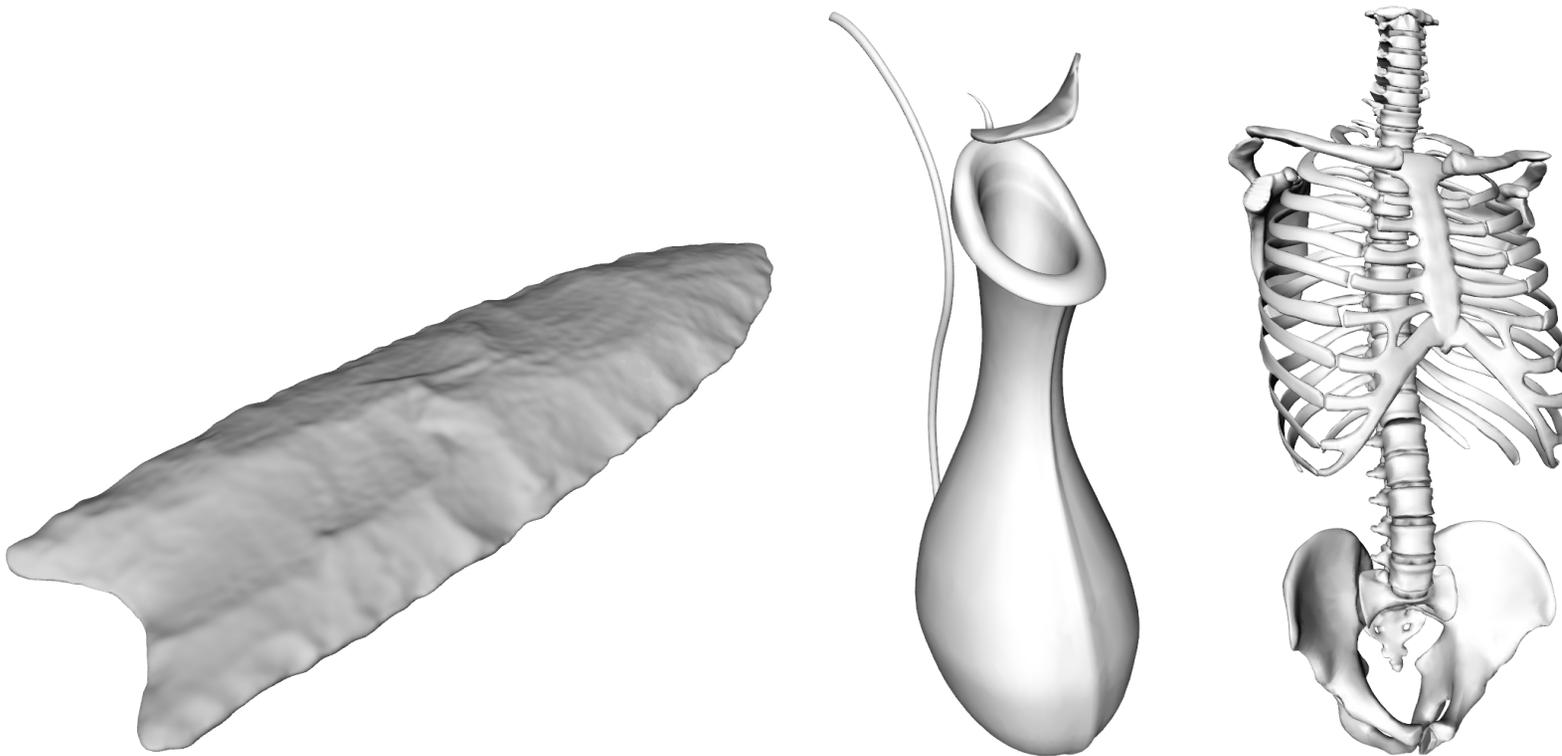
Which of these images do you like?





Study Setup: Images

- 30 images of 3 “models” generated:
 archaeological, botanical, and medical model



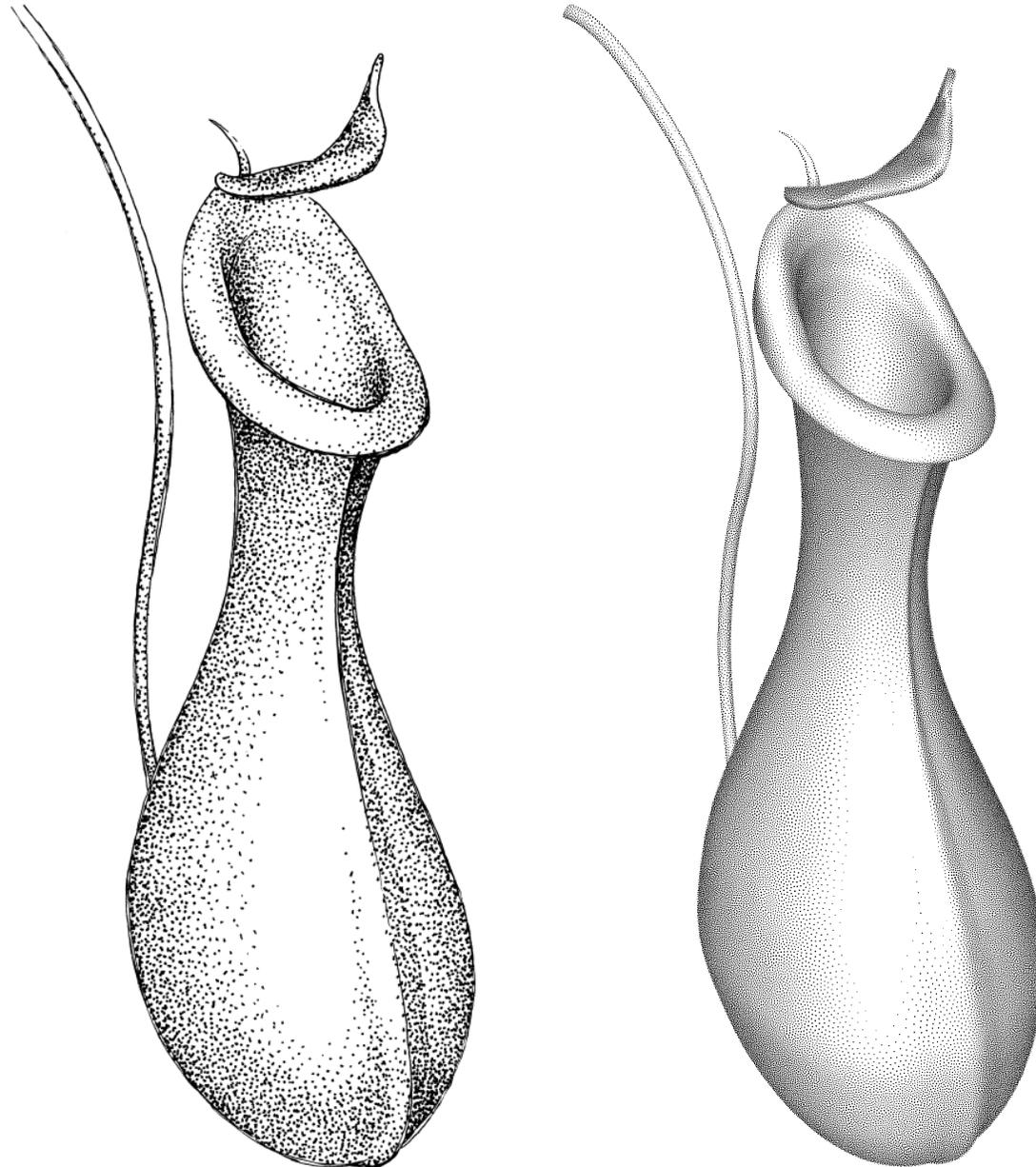
- 5 professional illustrators and 5 NPR algorithms

Study Setup: Procedure

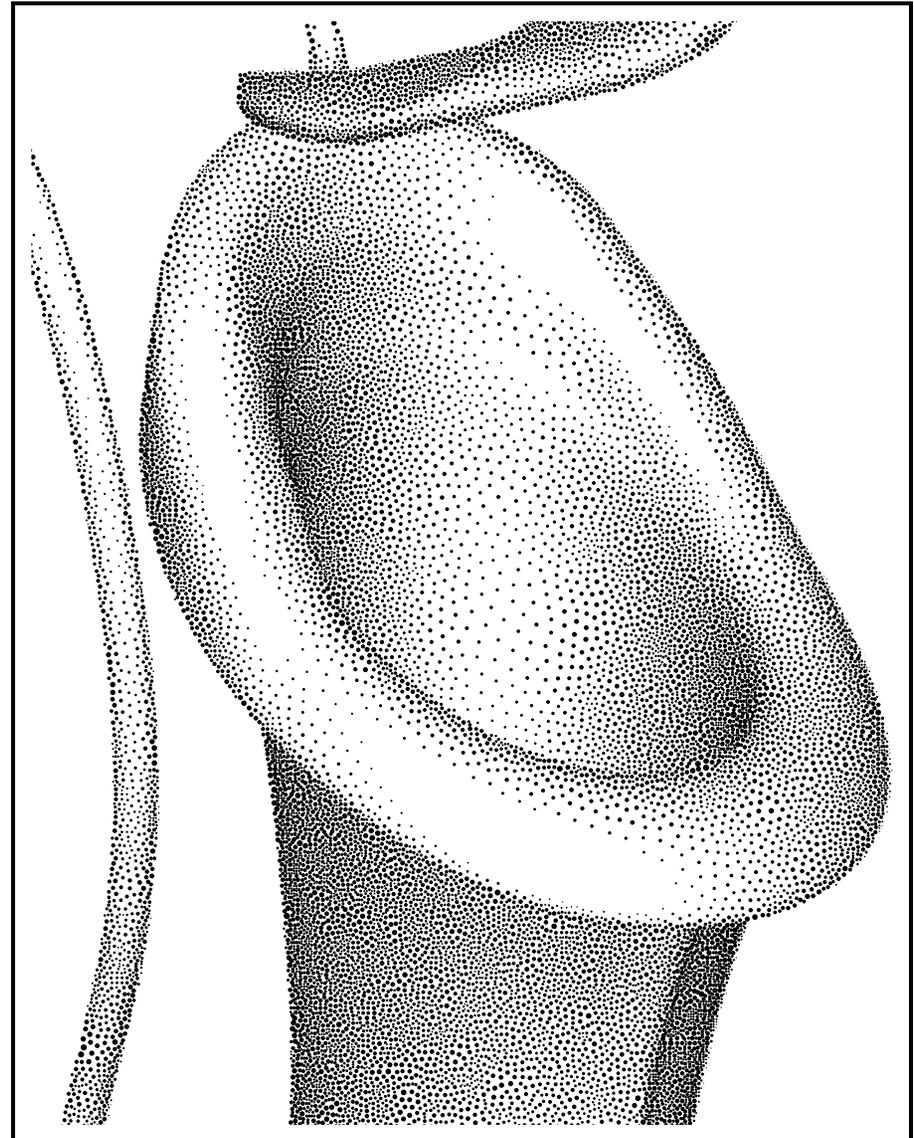
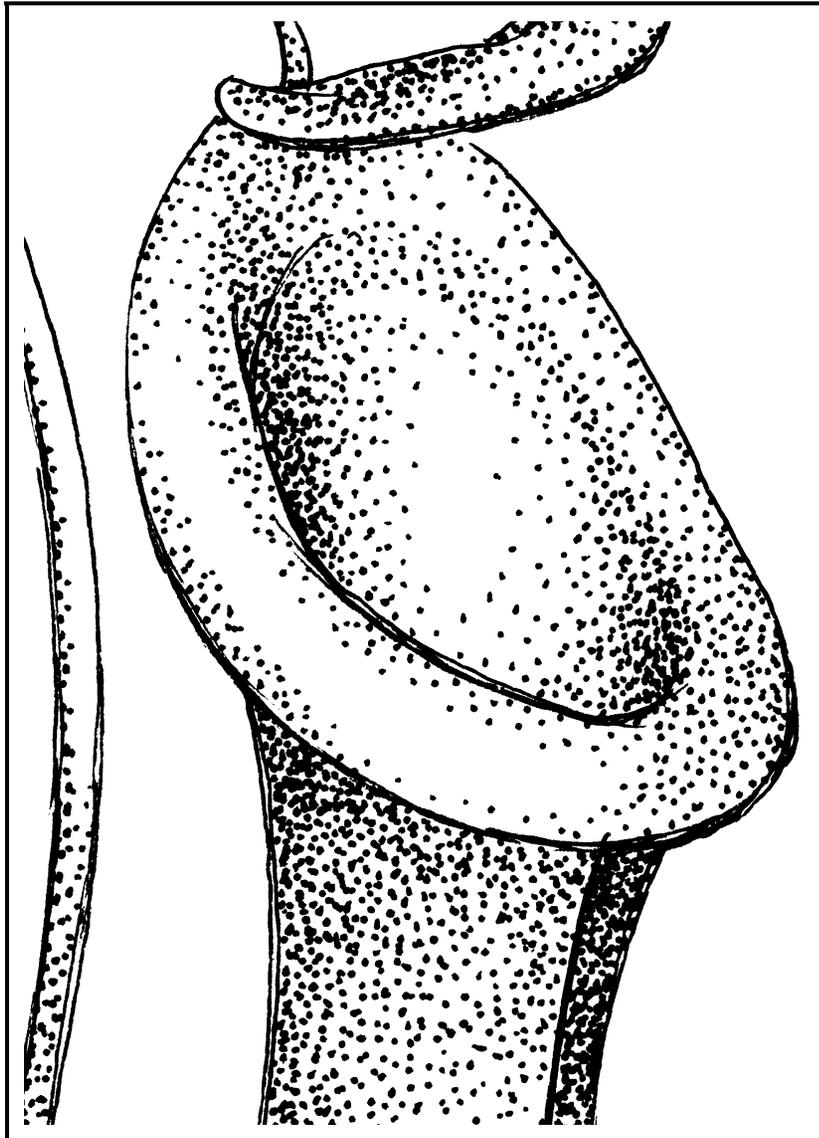
- about 1 hour or less for each session
- three stages
 1. unconstrained pile-sorting: grouping objects, free choice of criteria
 2. semi-structured interview: discussion of the piles and predefined questions
 3. post-session questionnaire: demographics and previous experiences
- data acquisition through video and note taking



Mark Density and Complexity

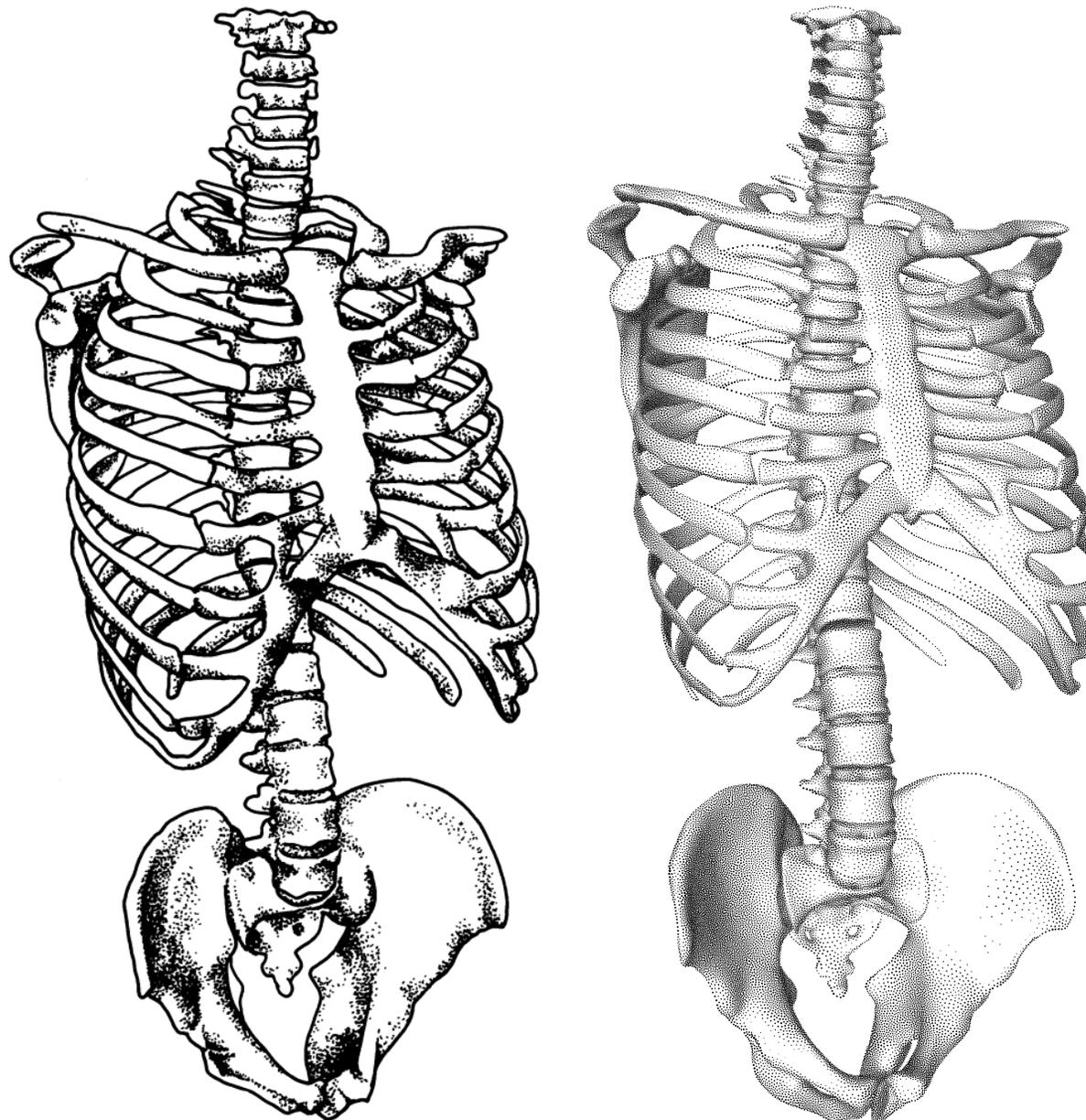


Mark Density and Complexity



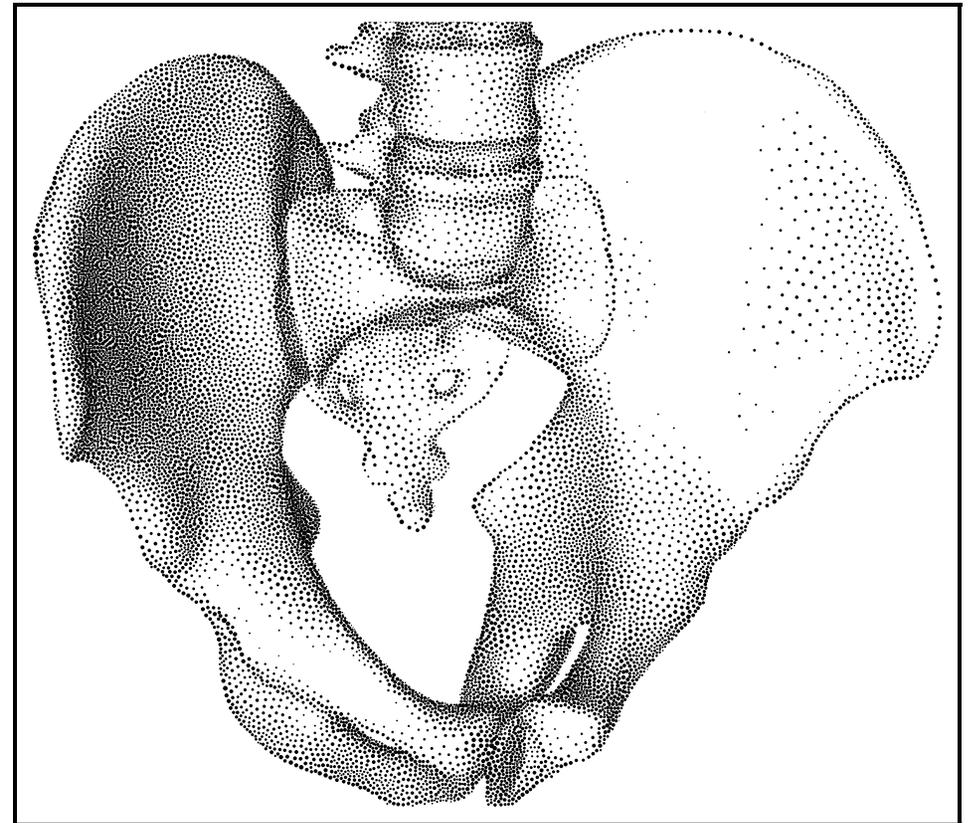
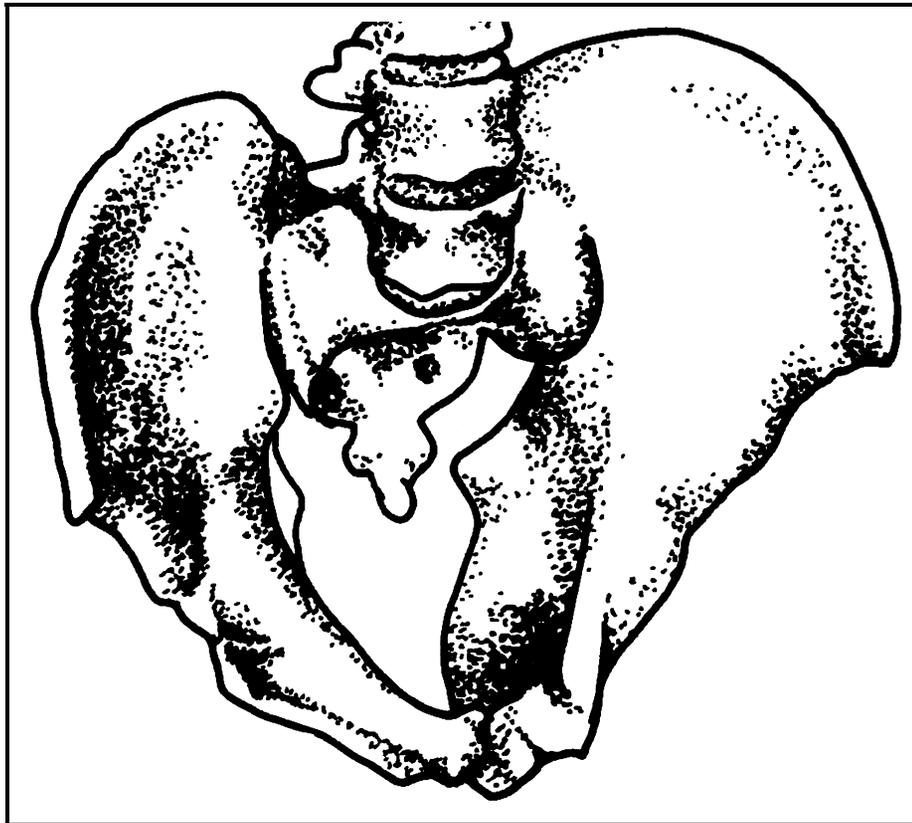
1. Hand-Drawn vs. Computer-Generated

Shading

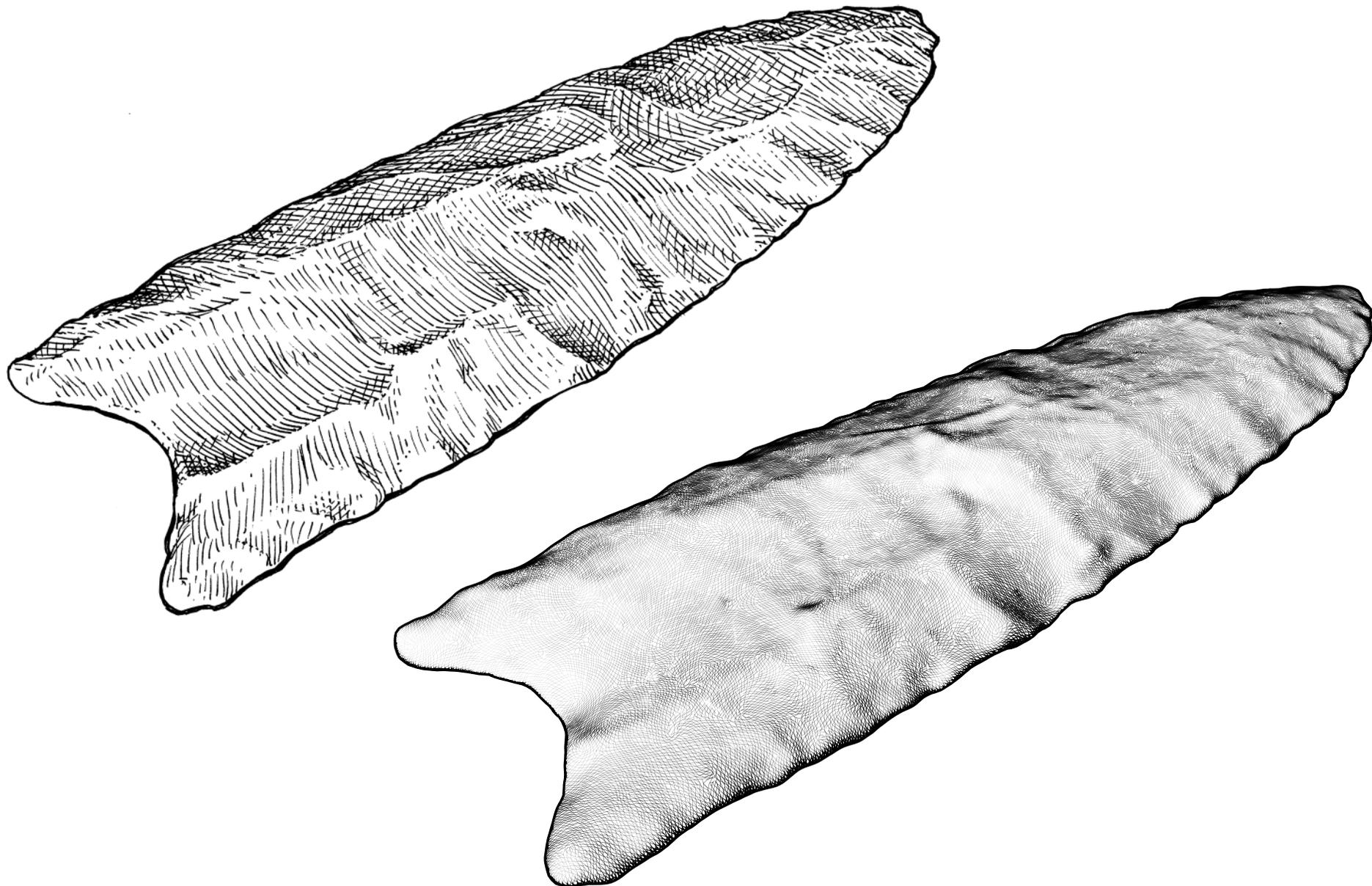


1. Hand-Drawn vs. Computer-Generated

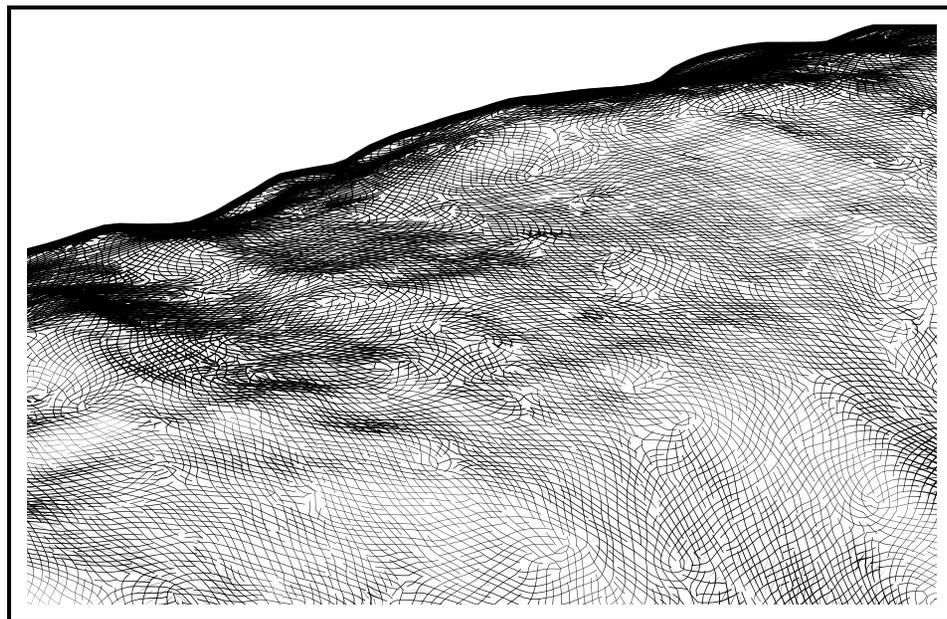
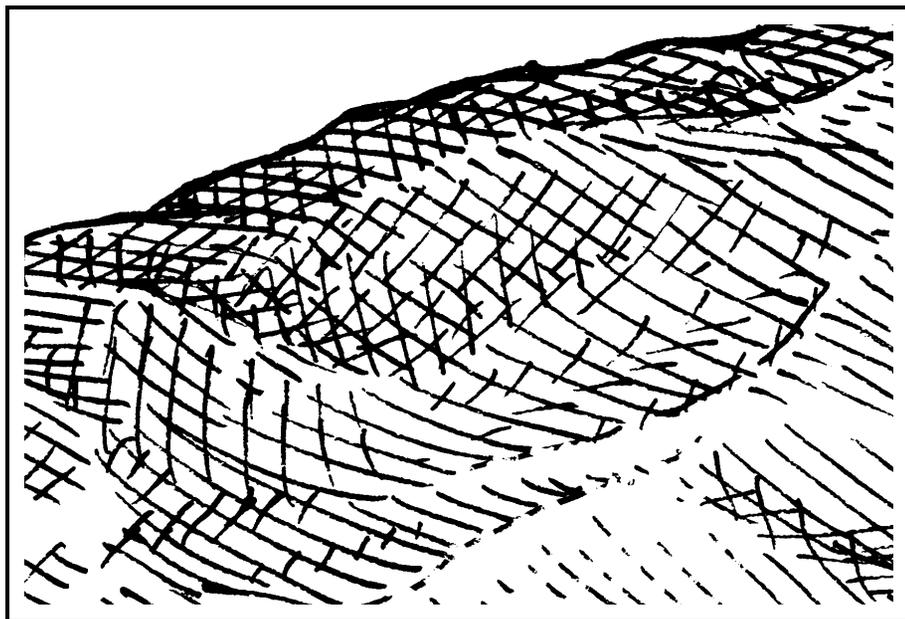
Shading



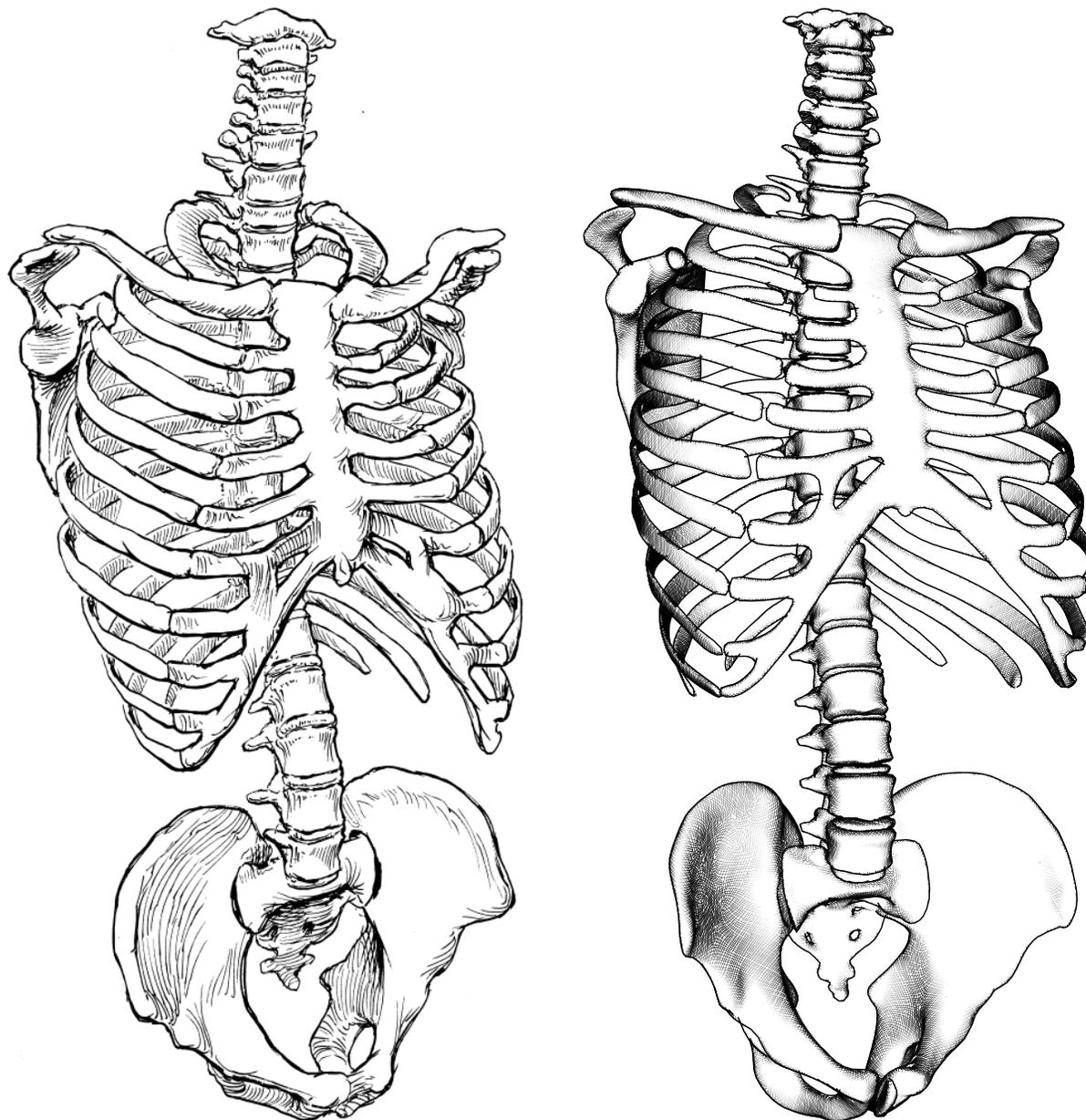
Material Depiction



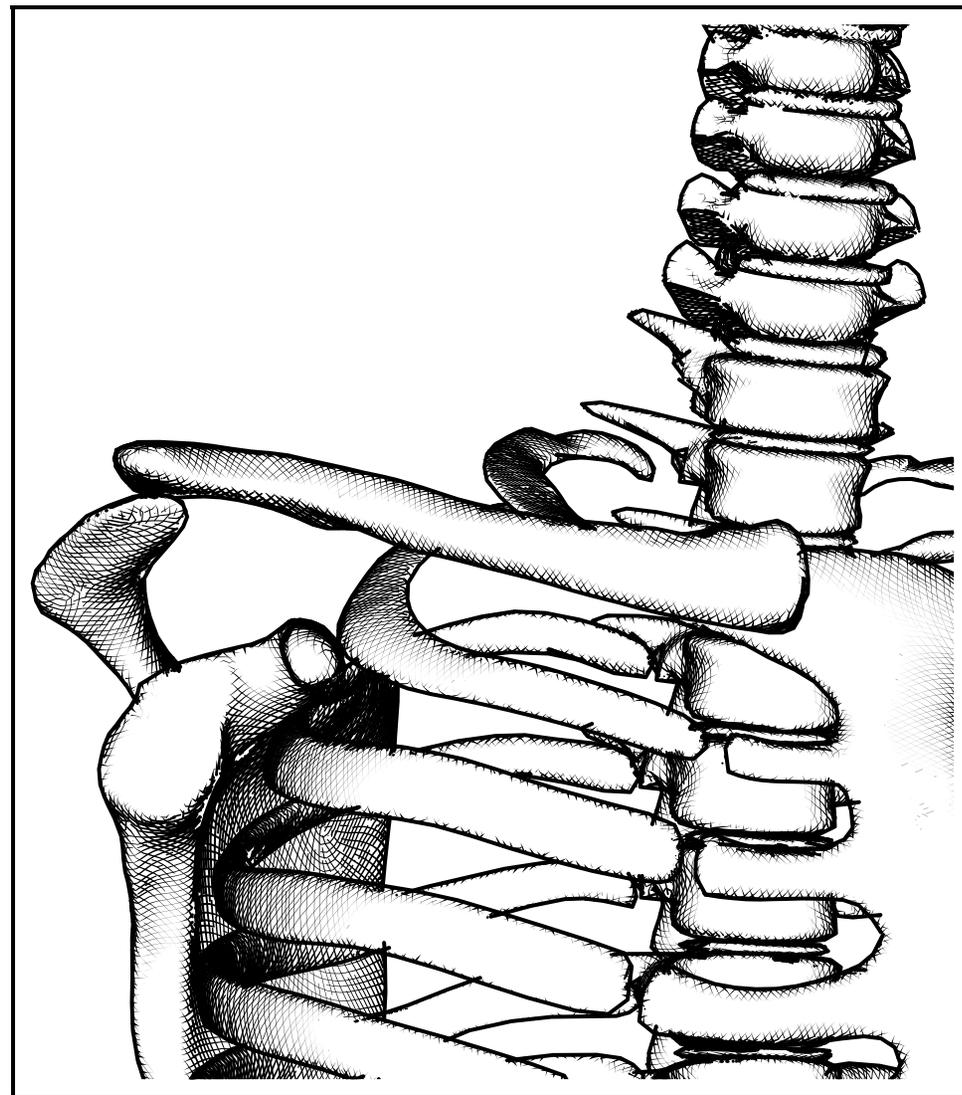
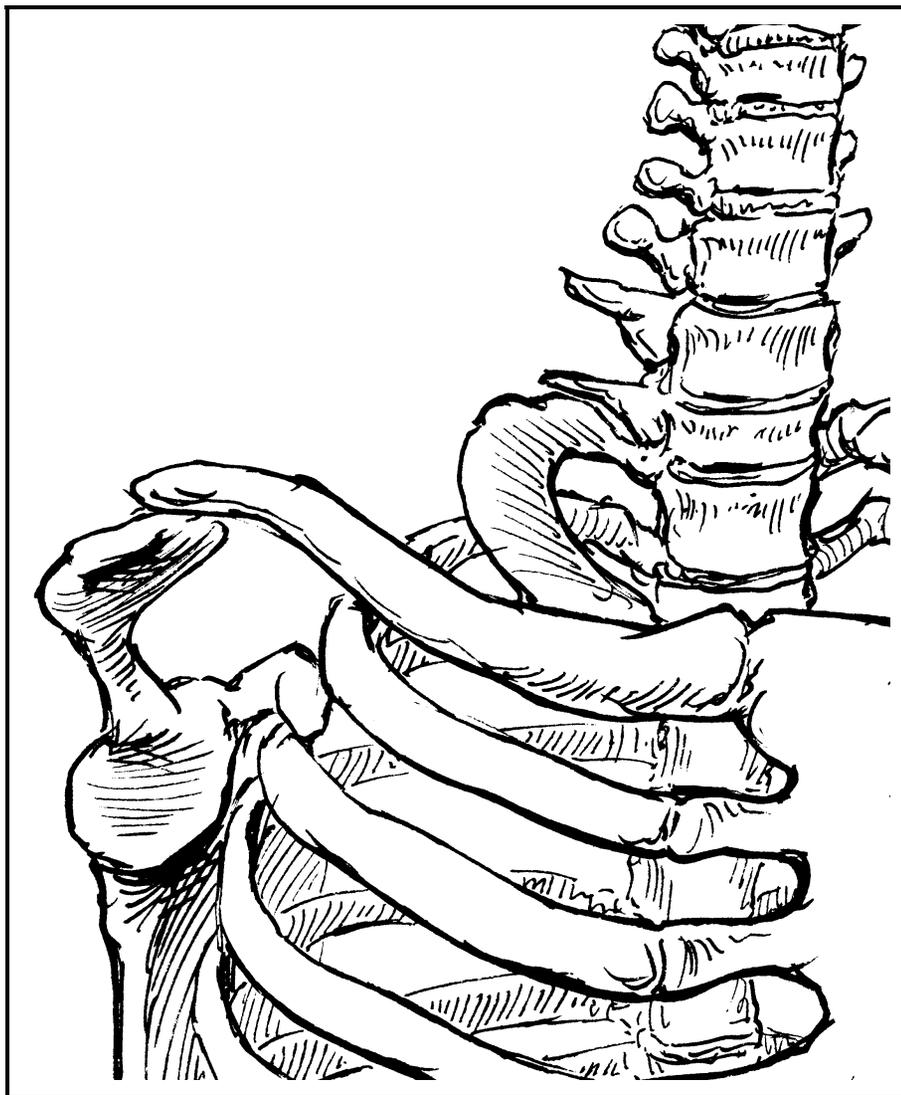
Material Depiction



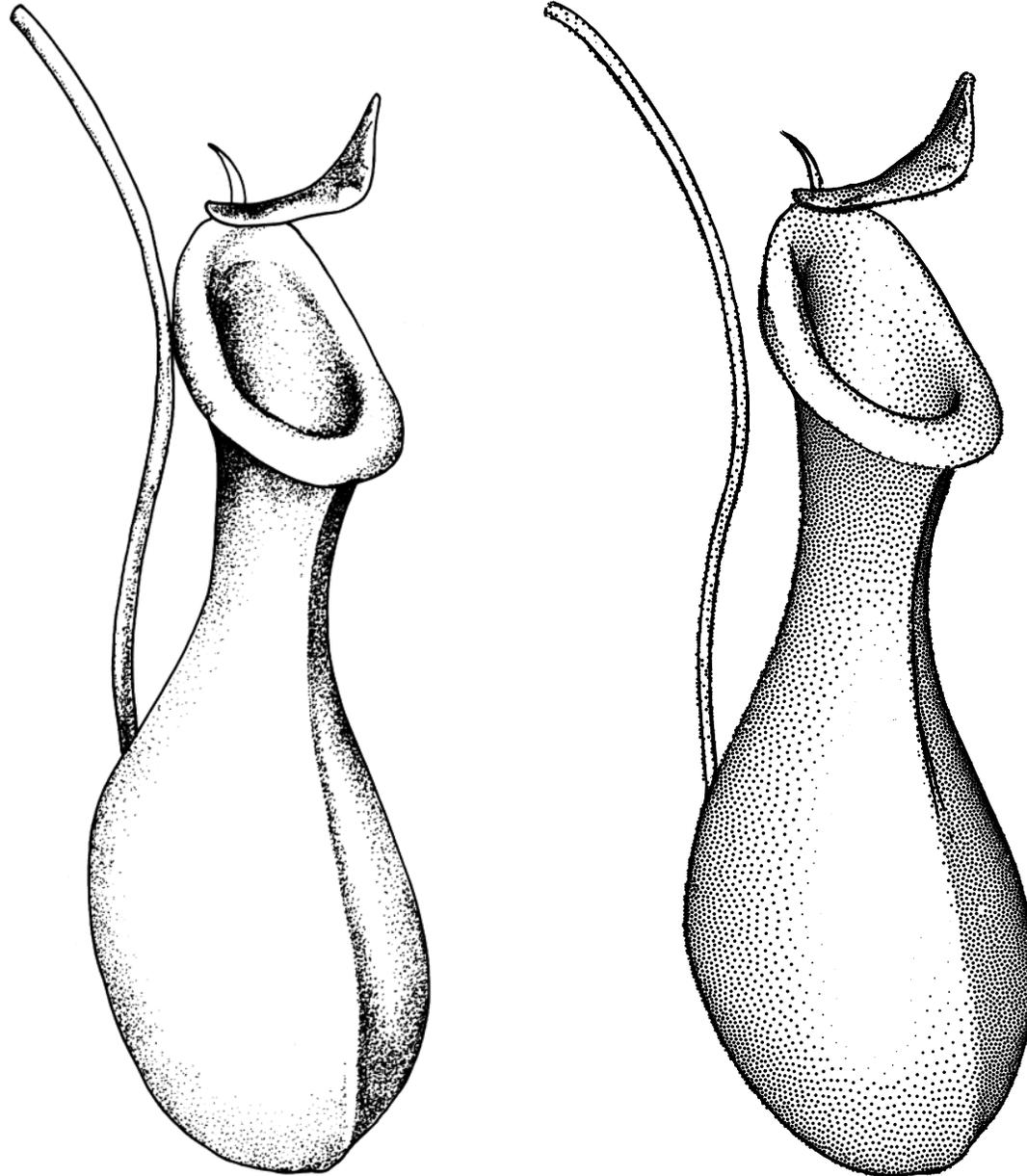
Shape Depiction



Shape Depiction

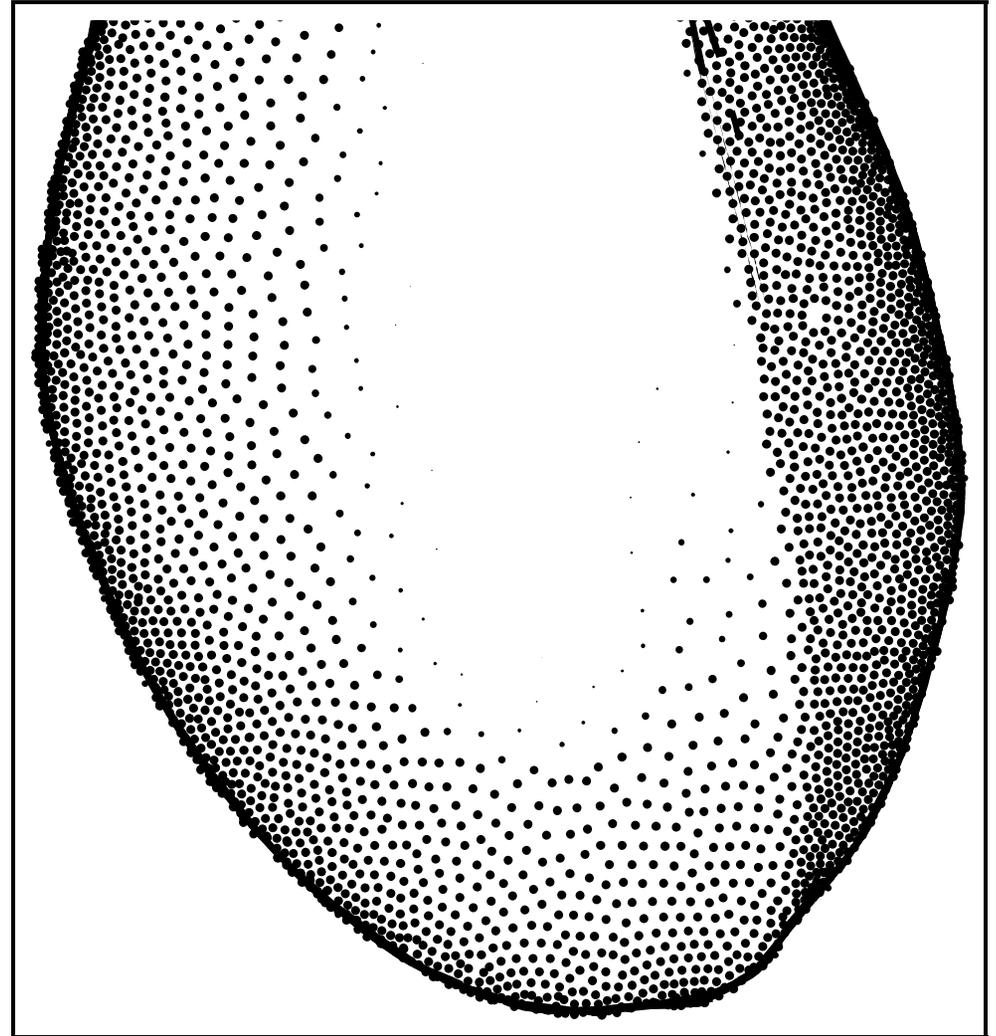
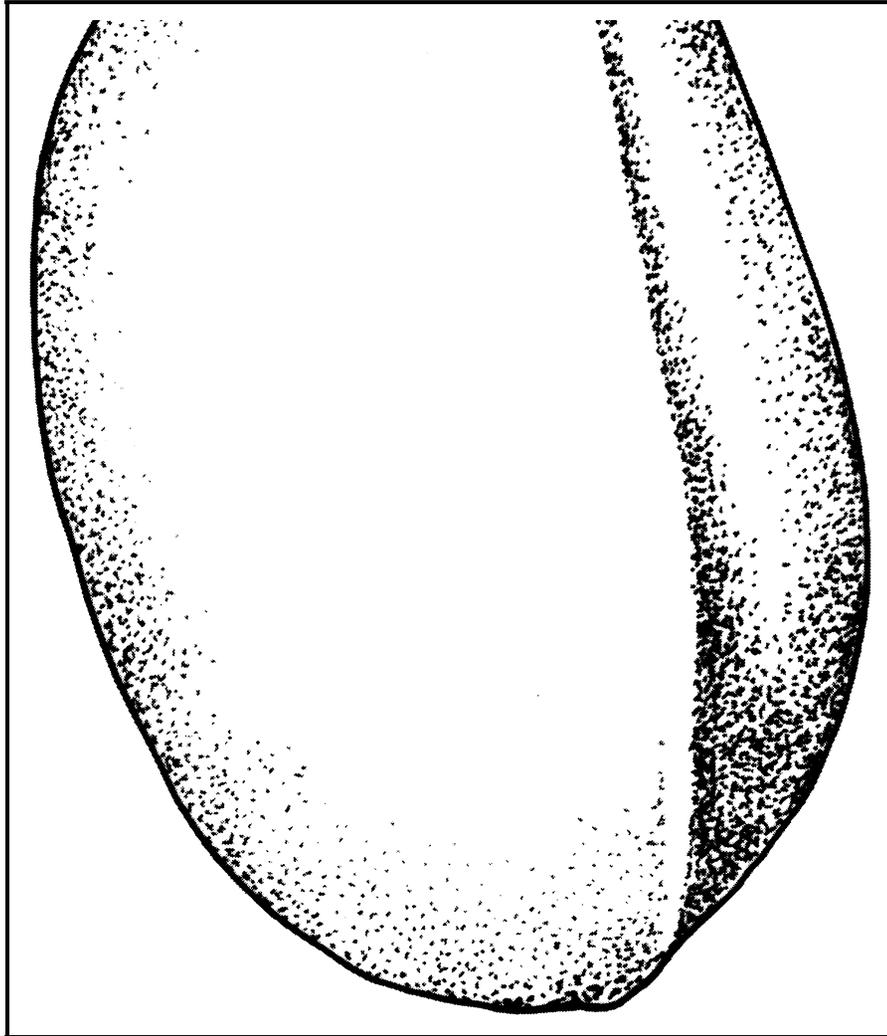


Mark Artifacts

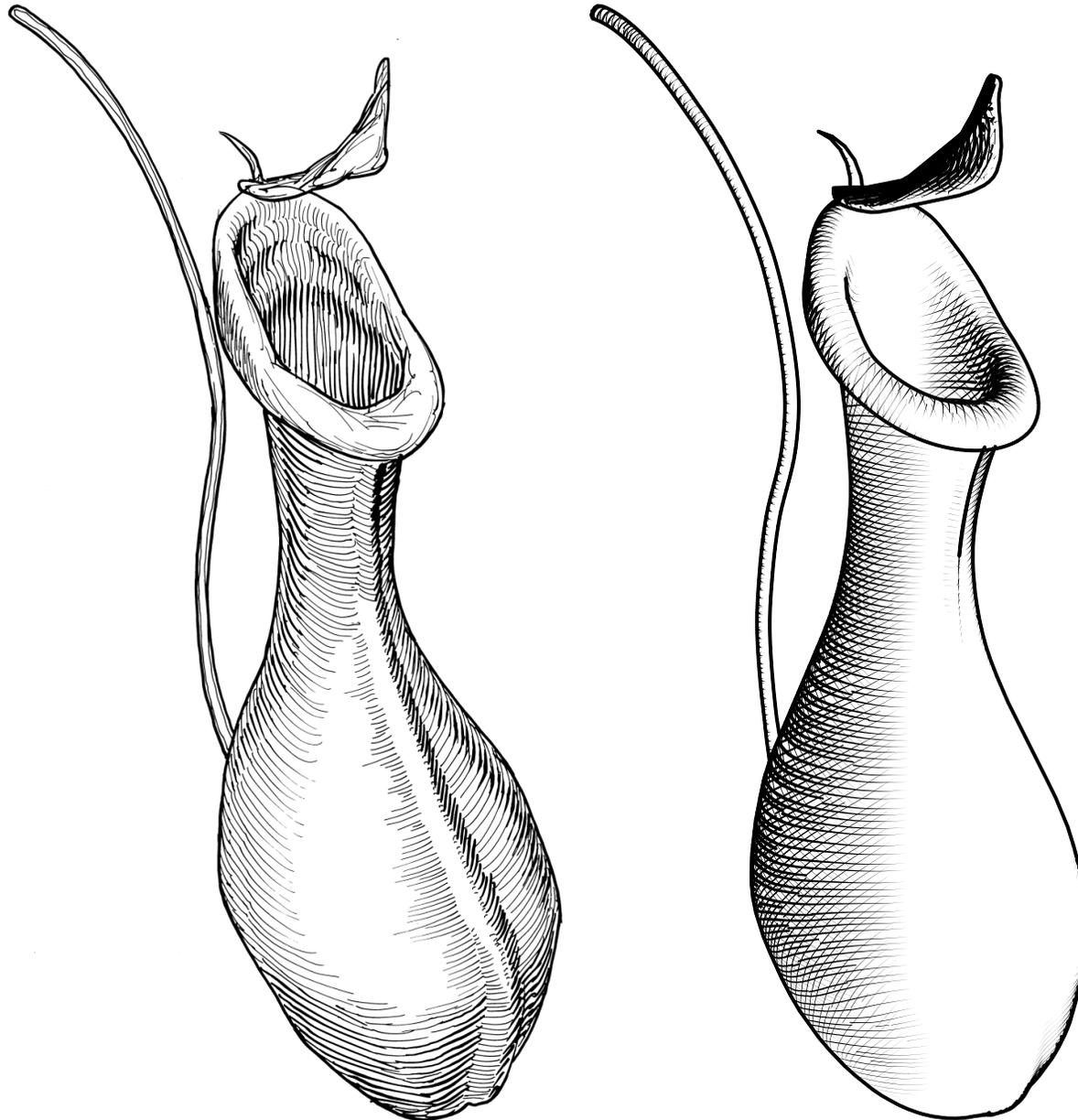


1. Hand-Drawn vs. Computer-Generated

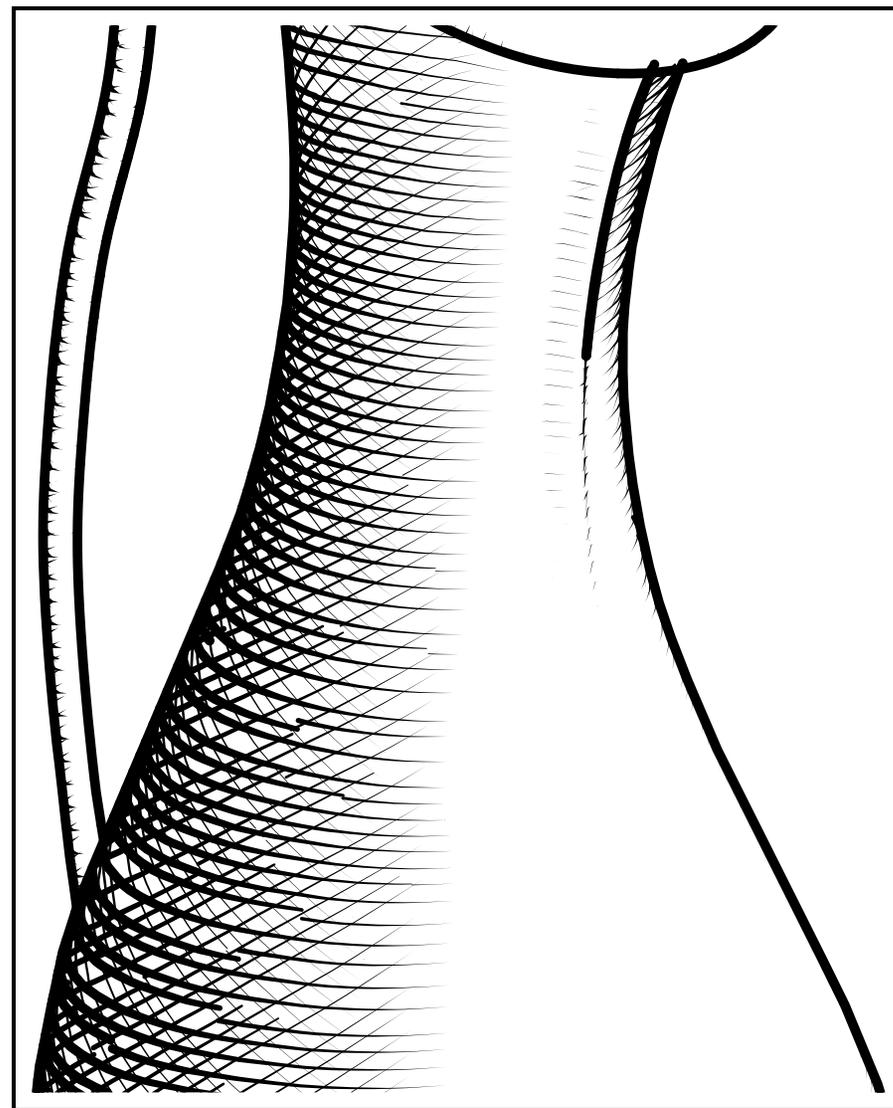
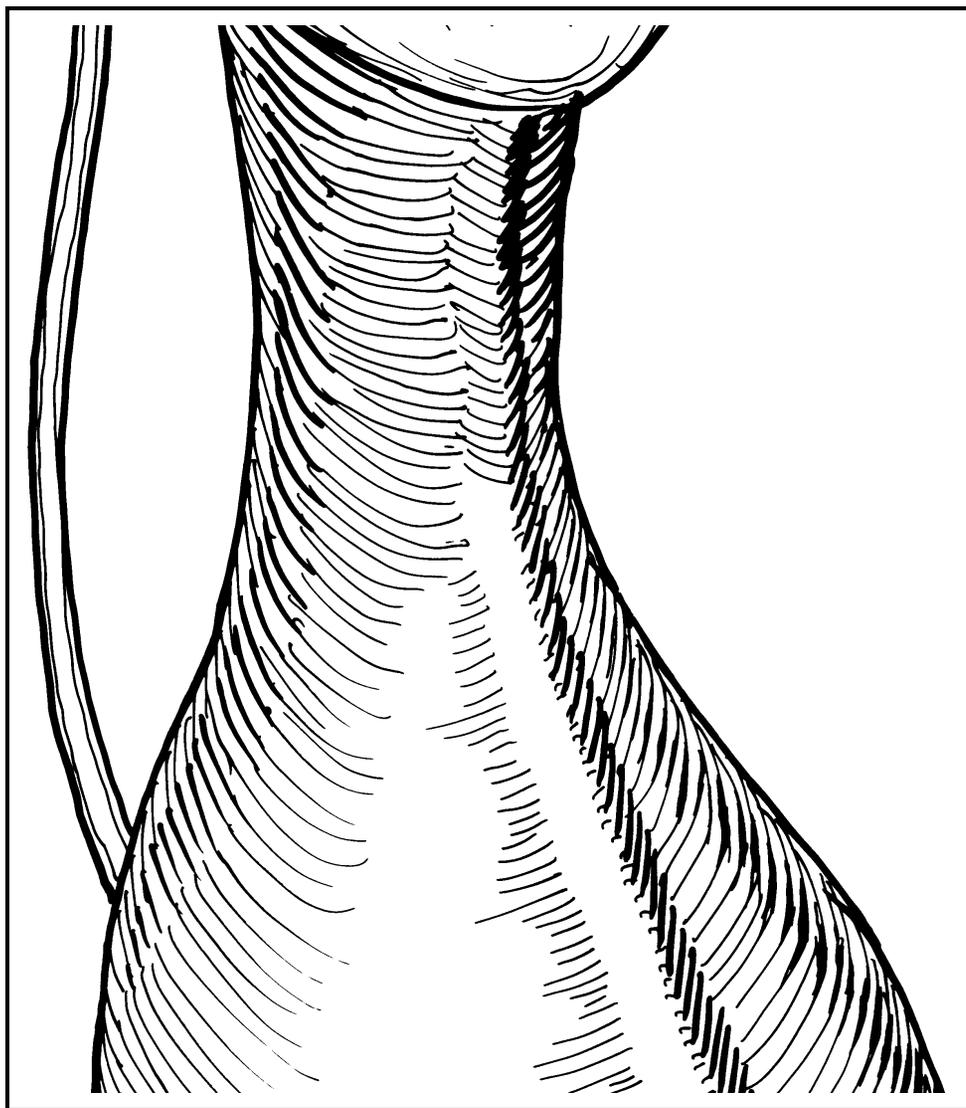
Mark Artifacts



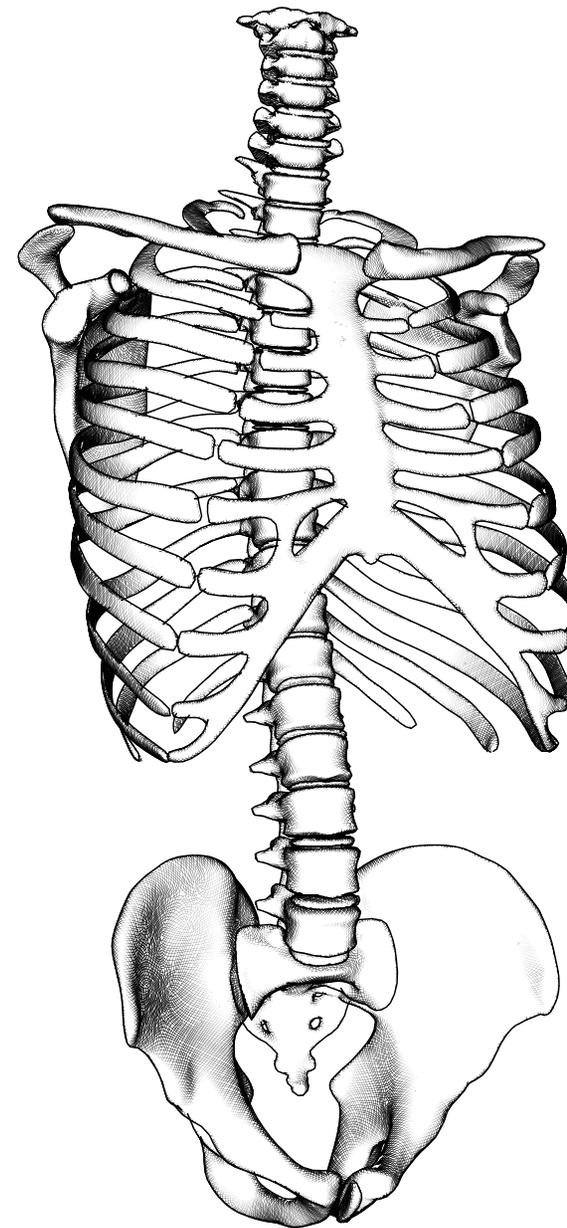
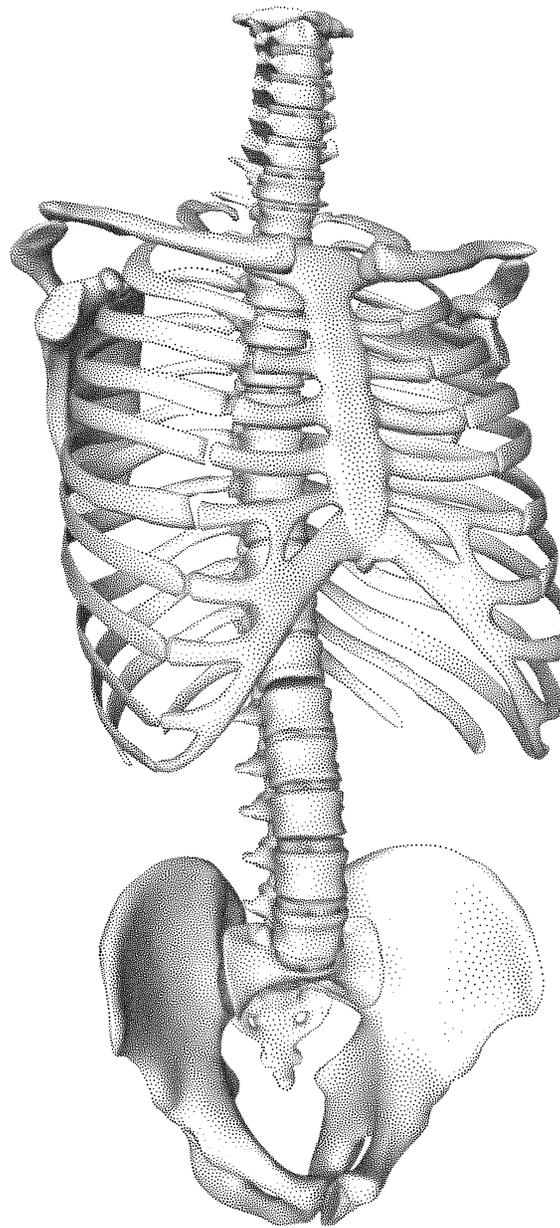
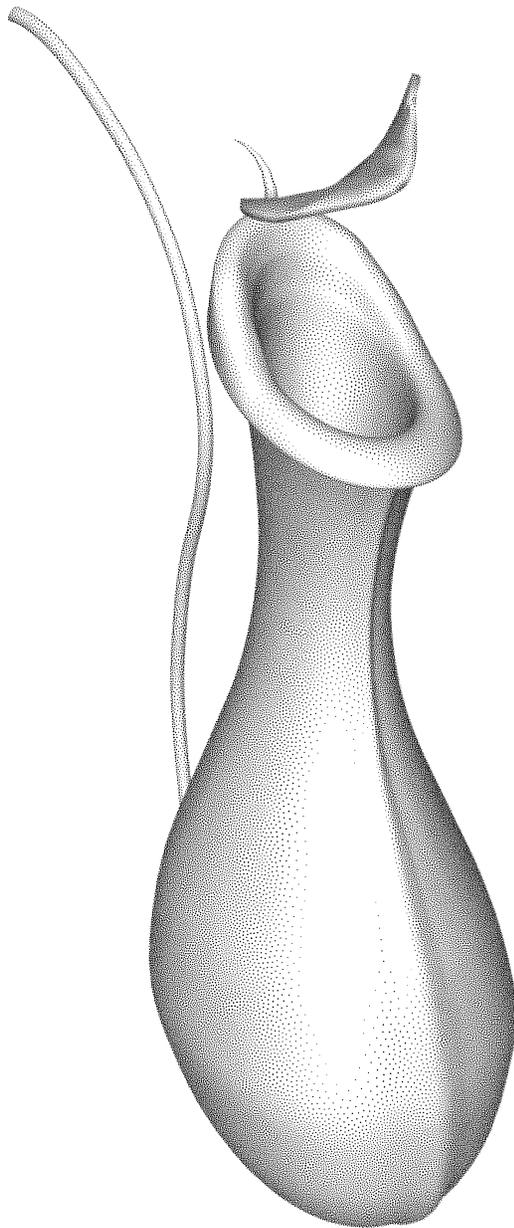
Mark Characteristics and Placement



Mark Characteristics and Placement

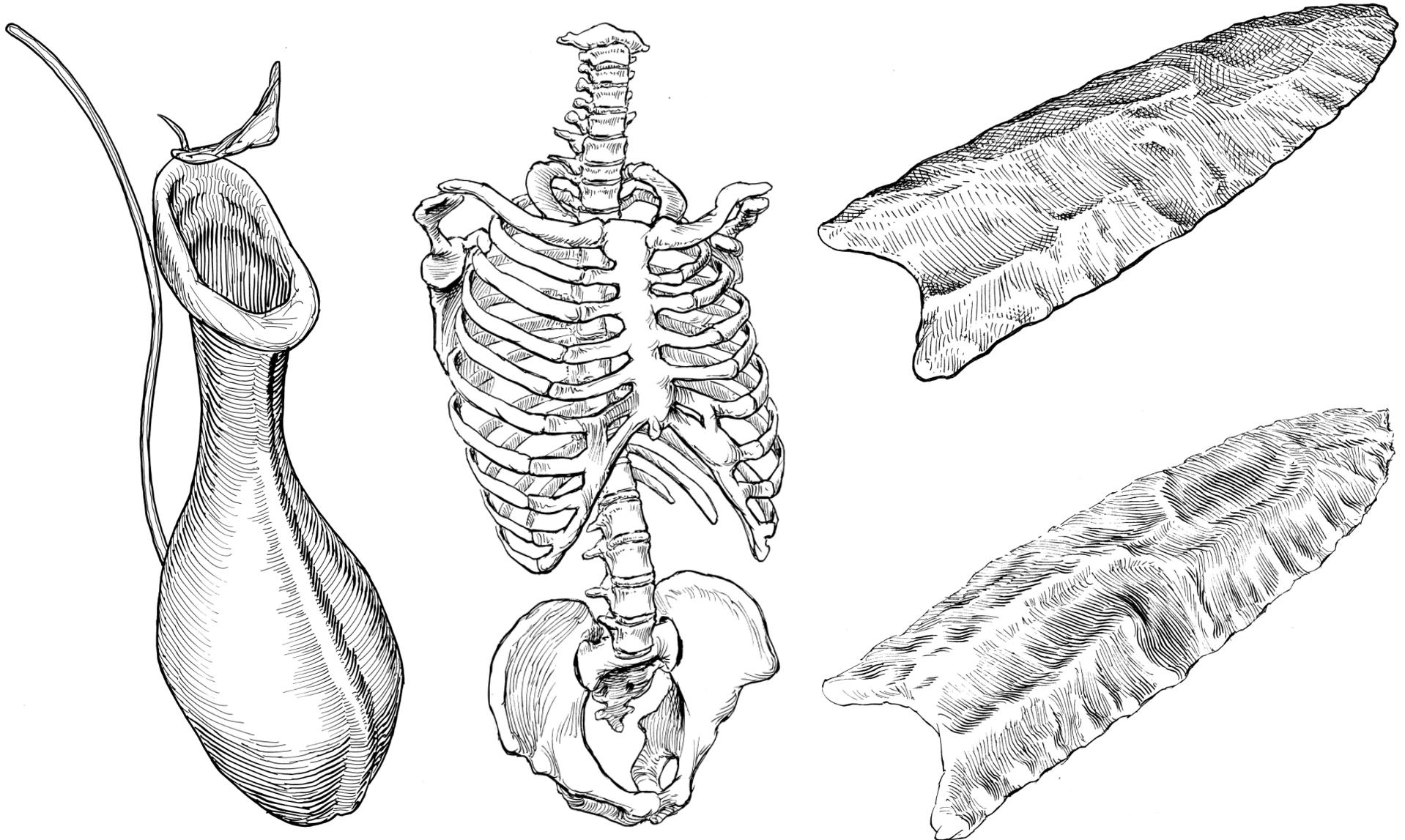


CG Images Liked for Exactness and Detail

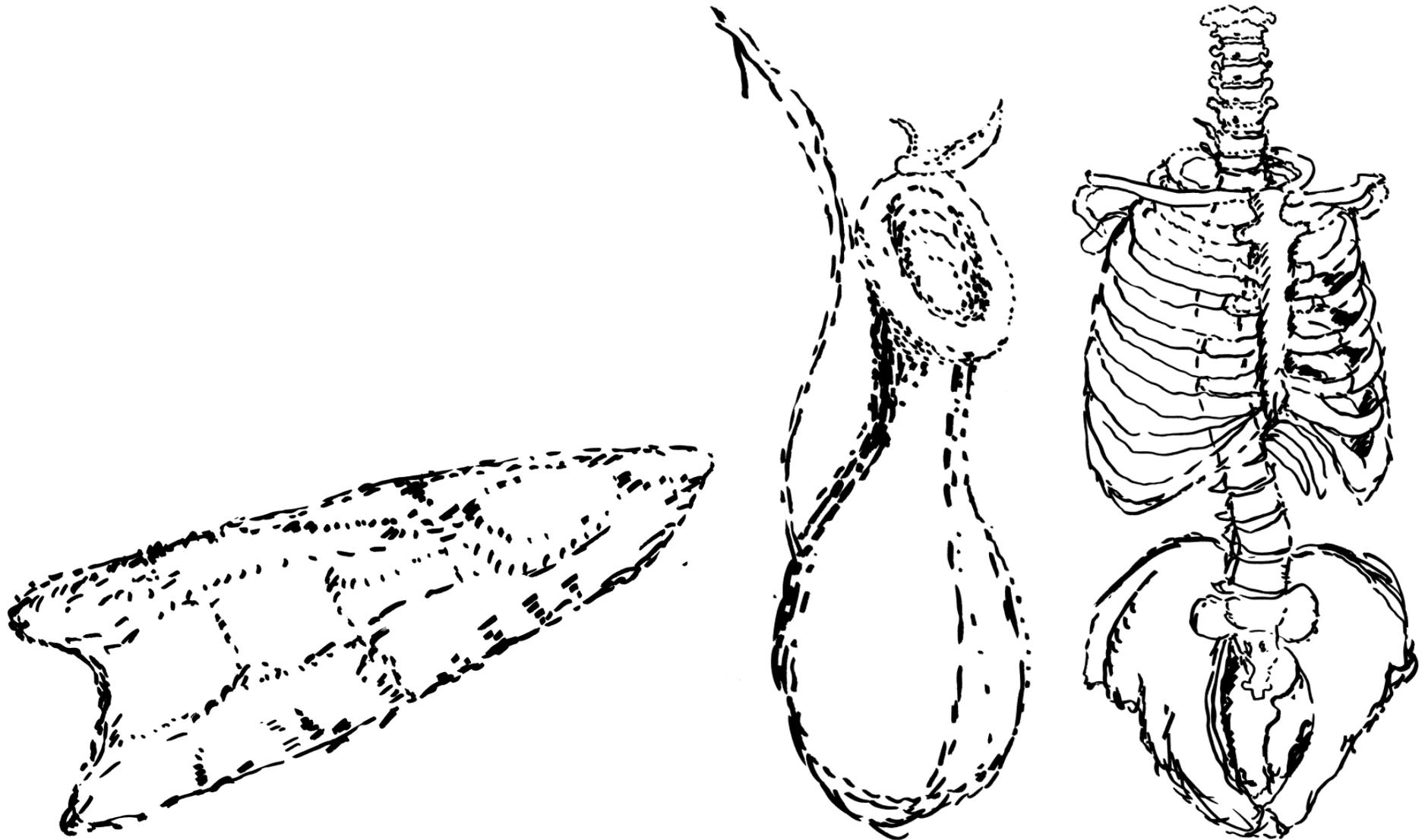


1. Image Aspects Liked and Disliked

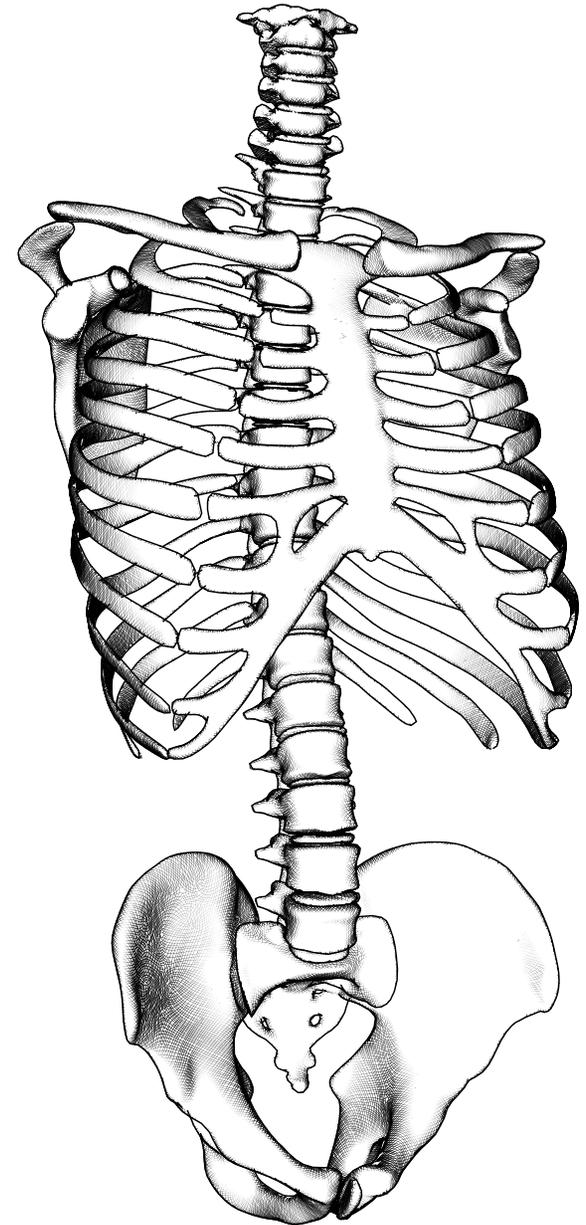
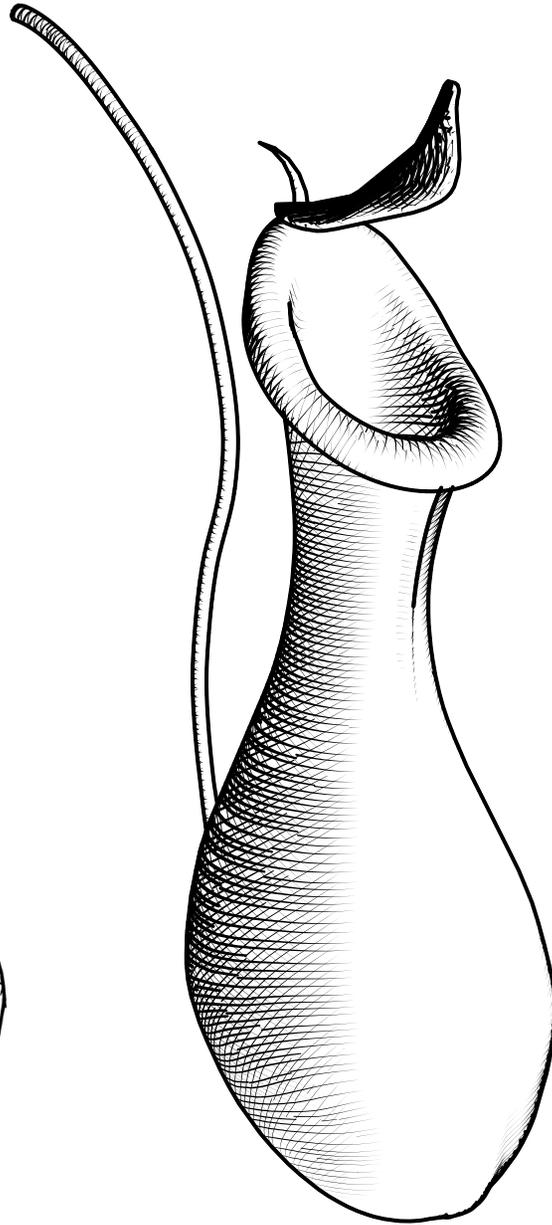
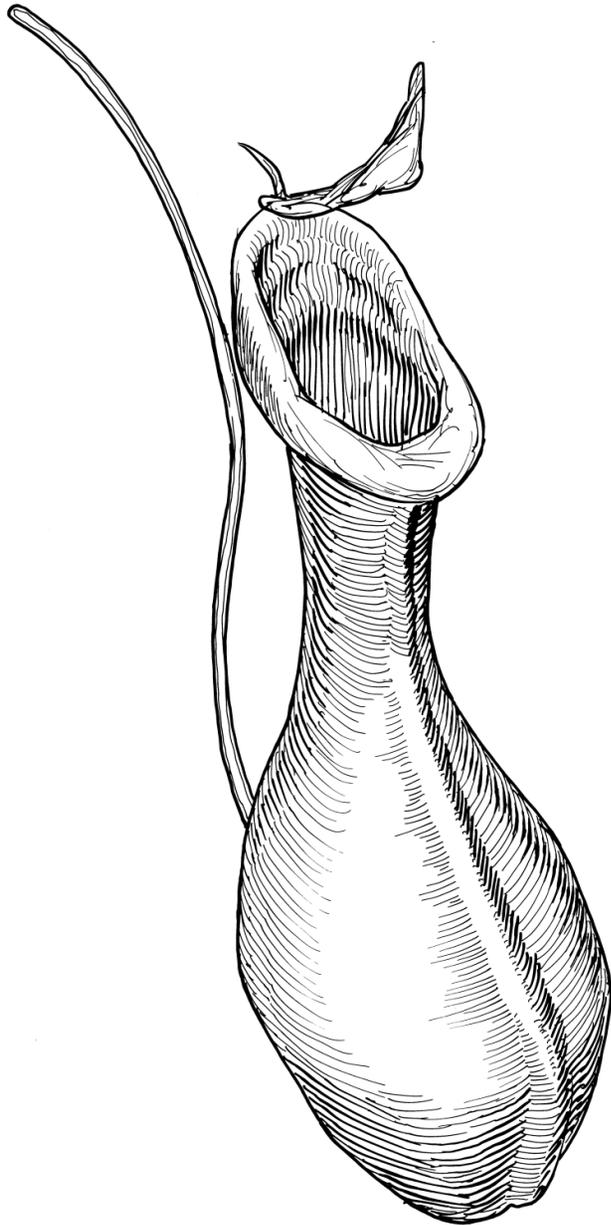
Hand-Drawn Images Liked for their “Character”



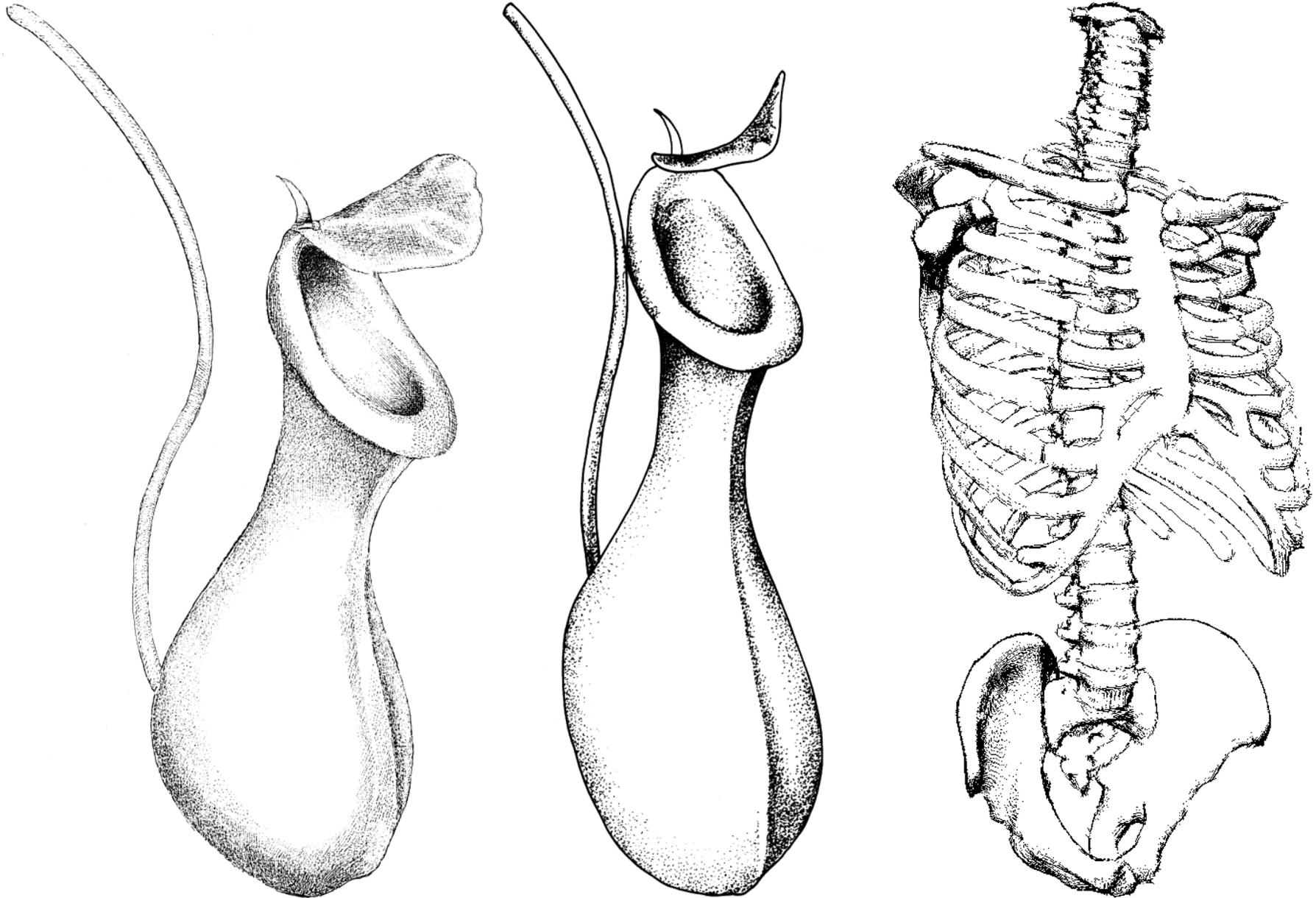
Too Much Sketchiness Disliked (for Illustrations)



Contrast Appreciated

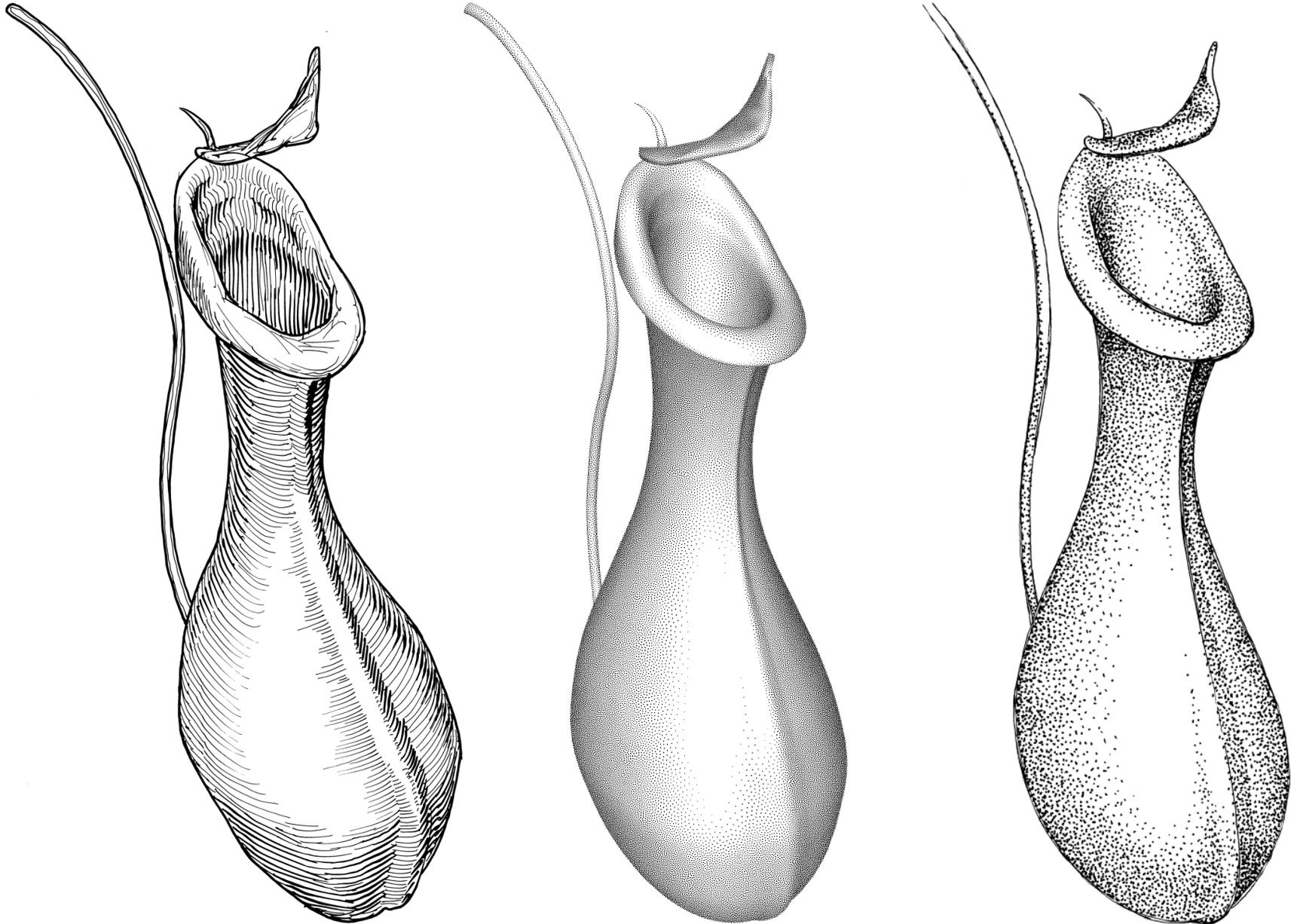


Too Much Abstraction Disliked

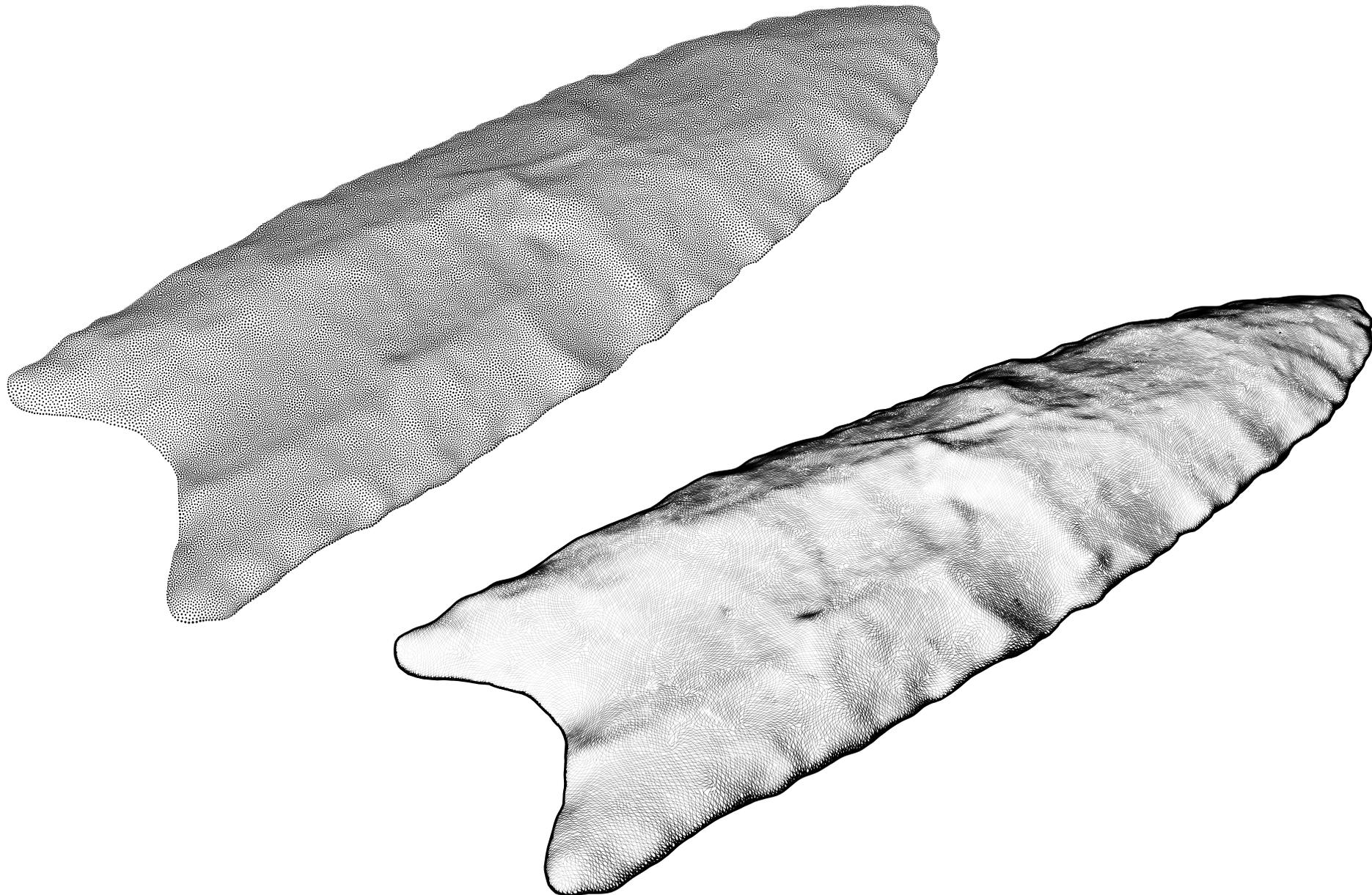


1. Image Aspects Liked and Disliked

Tonal Range Appreciated



Too Little Tonal Range Disliked



Lessons Learned

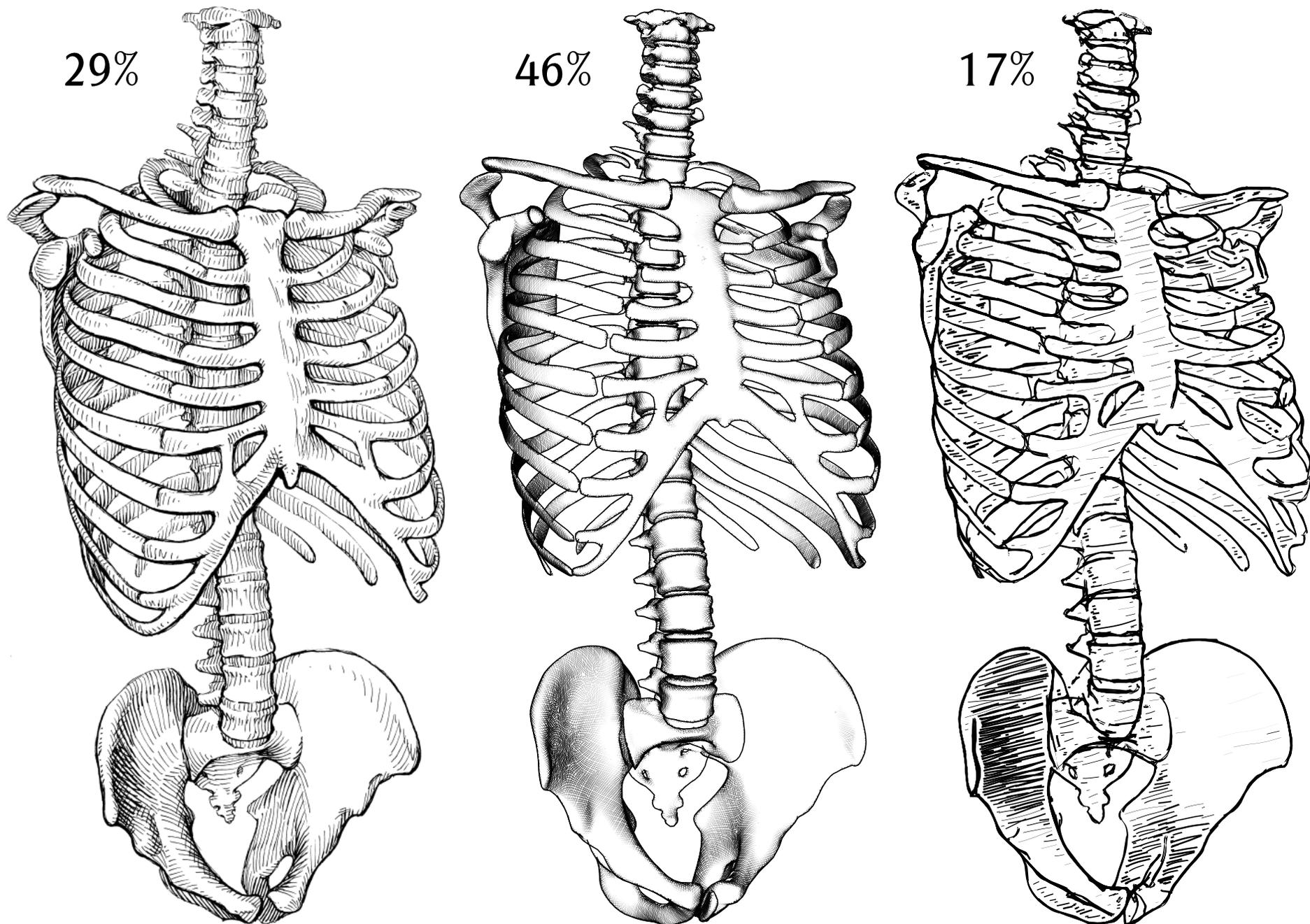
- noticeable differences between computer-generated and hand-drawn illustrations
- guidelines for improvement
- image liking depending on context
- both computer-generated and hand-drawn images liked
- diverging opinions about what is good aesthetics

Lessons Learned

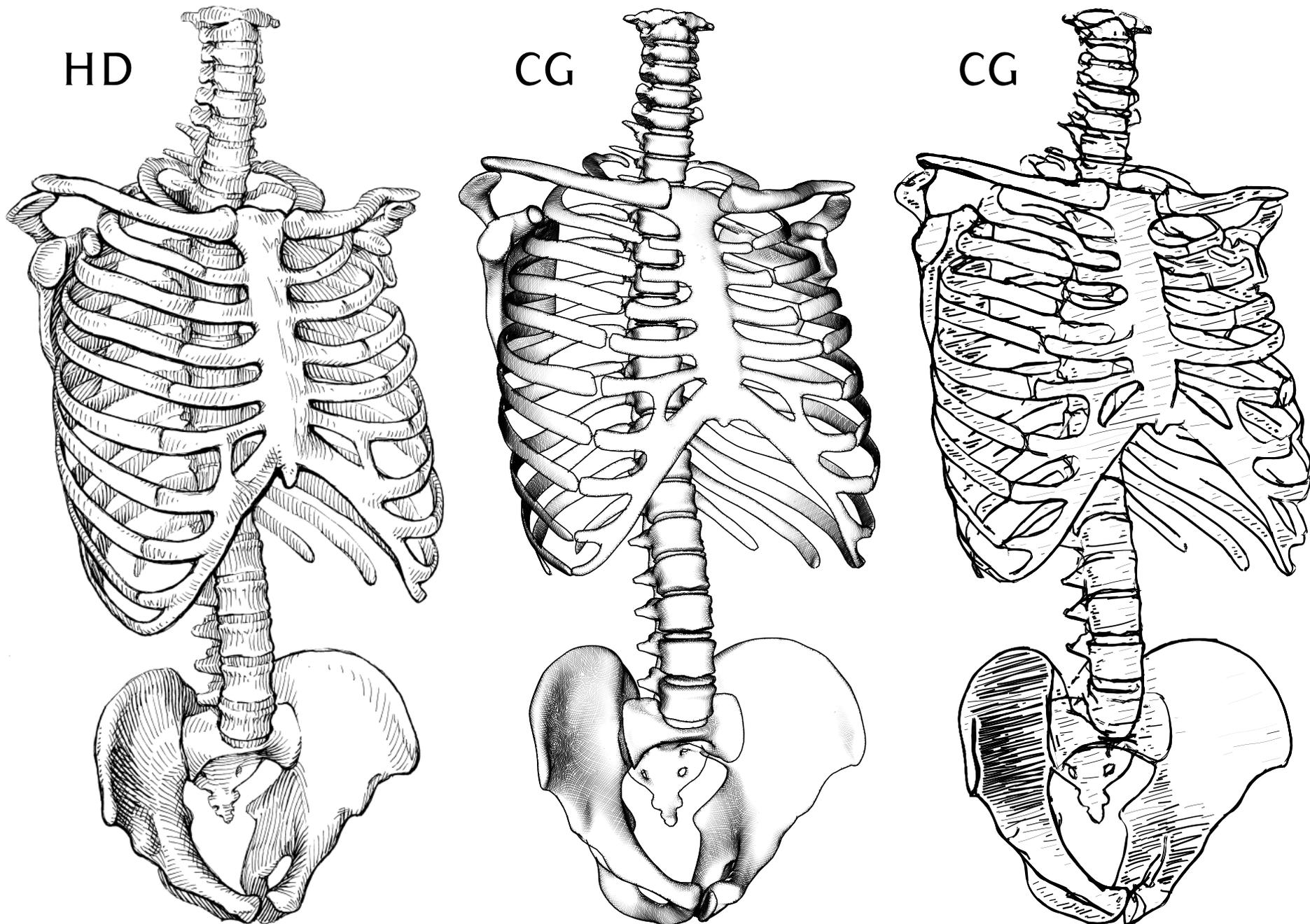
- noticeable differences between computer-generated and hand-drawn illustrations
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T. Isenberg, P. Neumann, S. Carpendale, M. Costa Sousa, and J. Jorge.
Non-Photorealistic Rendering in Context: An Observational Study.
In Proc. of NPAR 2006, ACM Press, 2006.

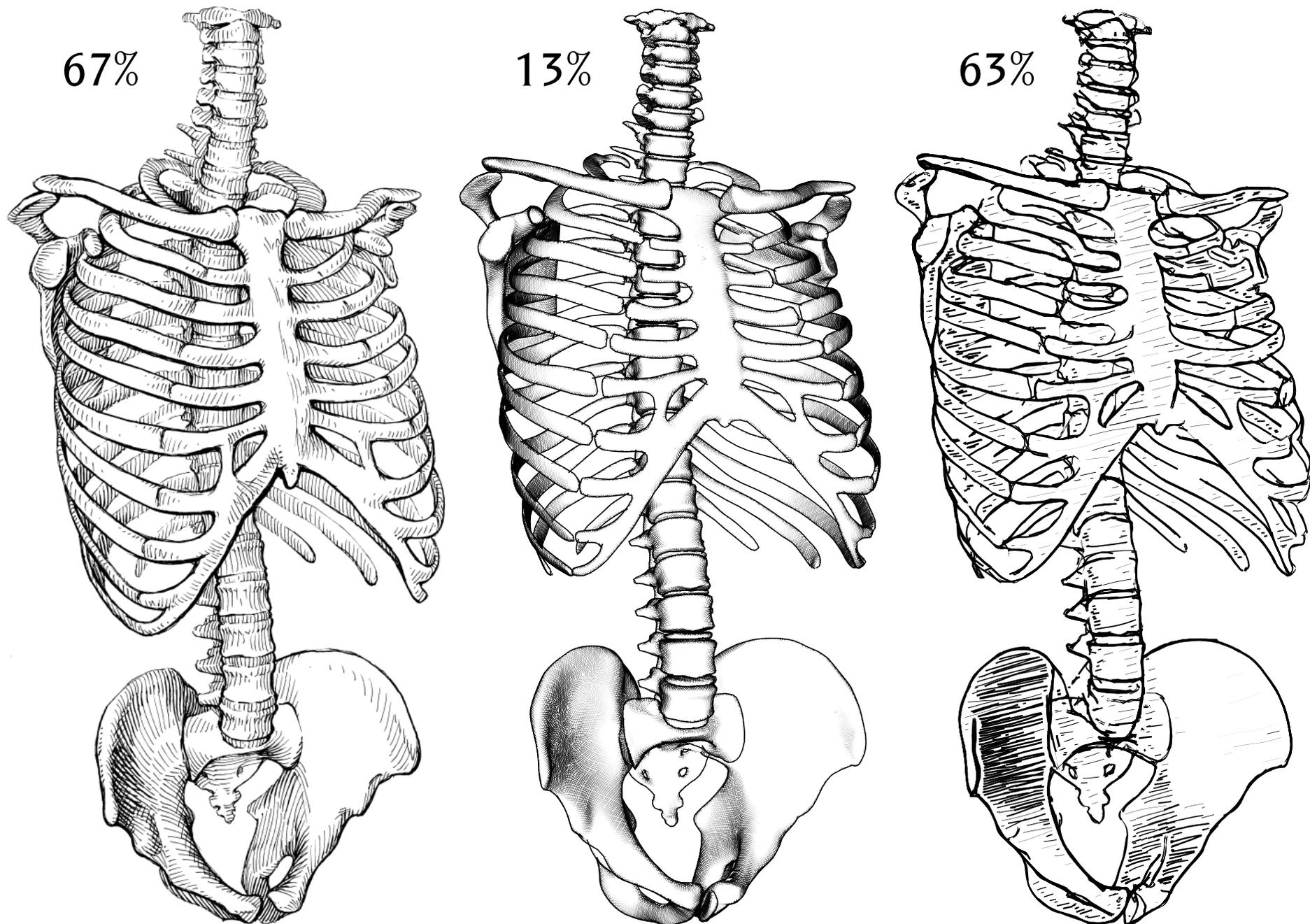
Percentages images were particularly liked by participants



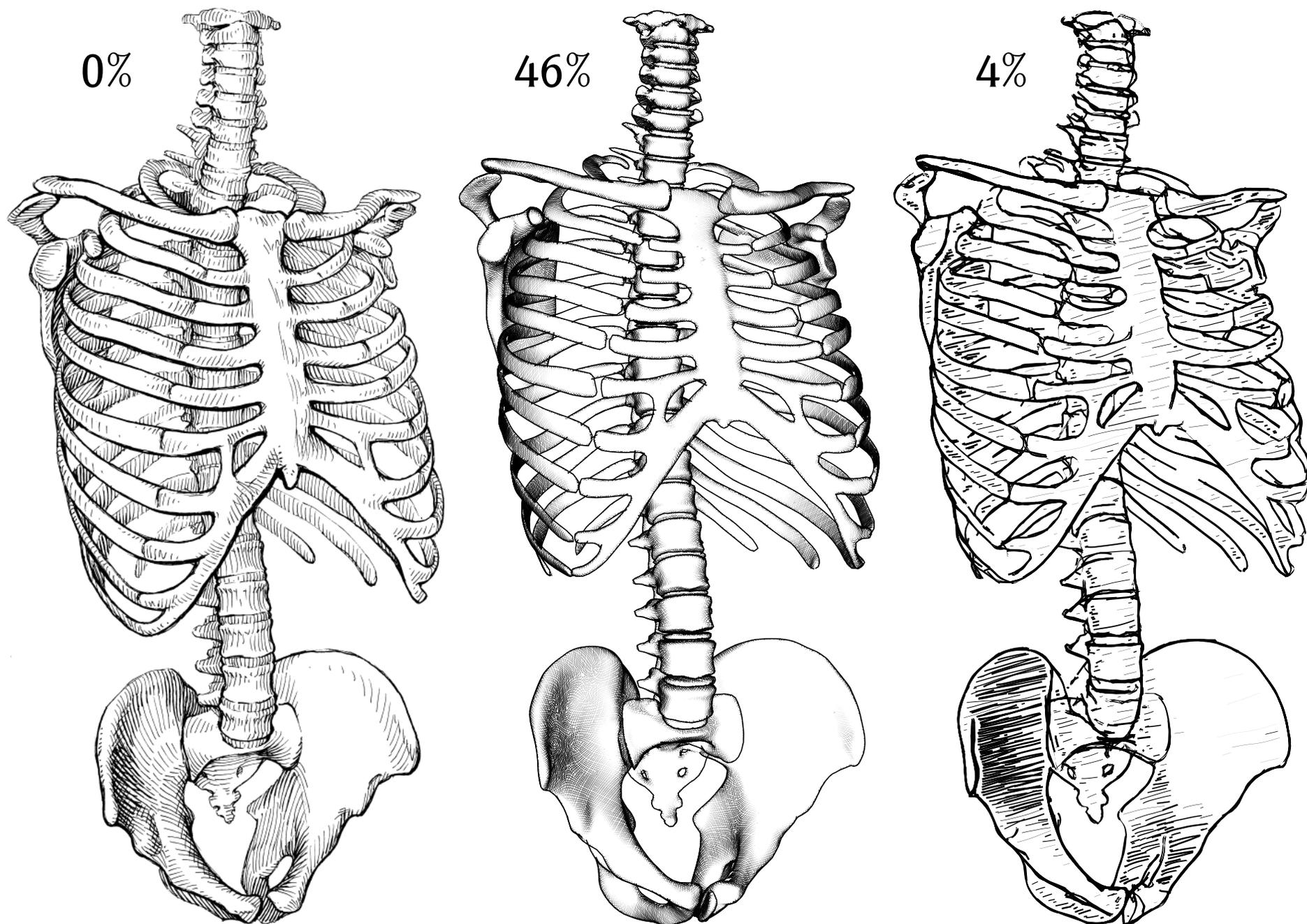
Hand-drawn or computer-generated?



Percentages images stood out as hand-drawn for participants



Percentages images stood out as computer-generated for participants



Thanks for your attention!

Special thanks to illustrators William M. Andrews, Davide Brunelli, Humberto Costa Sousa Filho, Andrew E. B. Swift, and Lynda Smith Touart and to Tobias Germer & Adrian Secord!

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funding agencies:



