Mariana Crow (*Corvus kubaryi*)

This piece is certainly the one that works the best. The idea here was to break up the static images of distribution maps by showing the history of distribution in a given region (Rota and Guam). I also wanted to counter an overly simplistic idea of these changes as negative or constantly shrinking: The range in Rota expands after the Second World War, while the species disappears from Guam completely in the same time, shortly reappearing due to a futile reintroduction.

Still, I am skeptical to which extent the latter worked, because both changes are unidirectional. I would have liked to show a species range in North America/Eurasia over the period of the Pleistocene glaciations, contracting and expanding according to the advance and retreat of the glaciers, but unfortunately, there's very little data on that. This is also a problem here, where I had to assume ranges based on very rough and sometimes contradictory estimates from a handful of surveys – the precision of these maps is highly exaggerated. However, the point was not so much precision, but rather depicting a species as its dynamic range, and I guess in this case it worked.

- National Research Council (U.S.) (ed.). (1997). *The scientific bases for preservation of the Mariana Crow*. Washington, D.C: National Academy Press.

Nyasasaurus parringtoni

The goal here was to give an impression of the multitude of different phylogenetic trees (and therefore genealogies) phylogenetic analyses (be they based on bone morphology or DNA) usually produce. There can be dozens of competing trees which result from the software's' analyses and which have to be sorted out in accordance with statistical yardsticks such as parsimony or likelihood. The problem here was that the "excess" trees are omitted almost every time in the published paper and even in the supplementary material – which meant I did not have enough data. For a flip-book with roughly 40 frames, I would have needed at least 30 trees of the same series in order to show the species „jump around". These jumping species are also called "rogue taxa", and watching them refuse to be nested into a tree is actually quite interesting. However, as this was not possible here, I decided to show just two competing trees in their composition, slowly building up over time.

I think this is the weakest piece of the series, since it neither follows the original idea nor depicts the "growth" of a tree in accordance with the nodes; the branches just magically grow with the same speed. The idea behind the piece, I am afraid, does not come across at all.

- Nesbitt, S. J., Barrett, P. M., Werning, S., Sidor, C. A., & Charig, A. J. (2012). The Oldest Dinosaur? A Middle Triassic Dinosauriform from Tanzania. *Biology Letters*, *9*(1), 20120949–20120949. http://doi.org/10.1098/rsbl.2012.0949

Cissa jefferyi

In this piece I wanted to show how boundaries are enacted between species. This species of bird, living in the highlands of Borneo, was split from a relative from Sumatra based on, among others, the characteristics of its call. I chose a sonogram and tried to mimic how it builds up over time as a graph. I think the temporal dimension as basis worked much better here than in *Nyasasaurus* *parringtoni*, and I was surprised on how well etching as a technique could imitate the actual sonograms – although I am afraid it disturbed the flip-book animation because it is too erratic.

Still, the original idea was, I think, missed in that piece, because you do not get to see the boundaries. Maybe I should have chosen syllables rather than a graph, maybe I should have put two graphs together so that one could see them diverge. But maybe acoustic characteristics are not really suitable for this kind of graphic depiction unless they are translated into a more geometric framework (such as in the last piece).

- Van Balen, S., Eaton, J. A., & Rheindt, F. E. (2011). Biology, Taxonomy and Conservation Status of the Short-tailed Green Magpie Cissa [t.] thalassina from Java. *Bird Conservation International*, 1–19. http://doi.org/10.1017/S0959270911000360

Sessile Oak (*Quercus petraea*)
English Oak (*Quercus robur*)
Downy Oak (*Quercus pubescens*)
Pyrenean Oak (*Quercus pyrenaica*)

In this flip-book, I took a scatter plot of four European oak species and dissected it into individual frames. Each geometric form on the pages represents one of the species. The original graphics set out to demonstrate how well you could (statistically) distinguish these trees by their leaf morphology (leaf size, shape, structure, and so on), but I wanted to do something different here. My aim was to break up the analytical clarity of the final graphics (into which I am sure went a lot of work) and only let them emerge again if you flip the pages rapidly. The clouds, more or less separated, are the result of a series of individual measurements, only by combining them you get the clear picture the morphometric analysis aims for.

My first attempt was to only show one data point per frame, which did not work very well because I only had a few dozens of frames and the animation was too slow. So I decided to put in four data points per frame (one for each species), which worked slightly better. However, the animation is not fast enough and does not loop, so the image of the scatter clouds does not really emerge, unfortunately. I could have accumulated the clouds over the frames, taking the data points of one page into the next, but I did not like the idea of a distribution that was "determined" as the result of such an analysis – often scientific experiments and models do not show you clear results unless you find a technique that can render the contrasts clearer. But I wanted to have that technique as part of putting images together, not as the content of a final image that was bound to show what everybody should have known in the first place. In this respect, you could call the geometric forms a bit phony, because they show the species delimitation from the very start. However, the morphometric analysis is not meant to establish boundaries, but to reproduce them in a different way, so I think this was justified. In any case, the flip-book (and the original paper) would not have worked at all if the data points had been indistinguishable.

I guess I like this one the most, even though it is not as conclusive as the first one. I think it is much closer to the problems of everyday scientific practice, and it gives a good impression (at least to me) how thin the line between a working and a non-working depiction of a species really is.

- Viscosi, V., Lepais, O., Gerber, S., & Fortini, P. (2009). Leaf morphological analyses in four European oak species (*Quercus*) and their hybrids: A comparison of traditional and geometric morphometric methods. *Plant Biosystems - An International Journal Dealing* *with All Aspects of Plant Biology*, *143*(3), 564–574. http://doi.org/10.1080/11263500902723129