

The Cephalopods of Jean-Baptiste Vérany: the Beast and the Beauties

Les Céphalopodes de Jean-Baptiste Vérany : La Bête et Les Belles

John R. Dolan¹

¹ Sorbonne Université/CNRS, Laboratoire d'Océanographie de Villefranche-sur-Mer, UMR 7093, Station Zoologique, 06230 Villefranche-sur-Mer, France, john.dolan@imev-mer.fr

ABSTRACT. Jean-Baptiste Vérany (1800-1865) was a naturalist of wide interests, and the founder of the *Muséum d'Histoire Naturelle de Nice*. His specialty was marine mollusks, especially cephalopods (e.g. octopuses, squids). Vérany's major monograph was on cephalopods of the Mediterranean Sea published in 1851, "*Mollusques méditerranéens; observés, décrits, figurés, et chromolithographiés d'après le vivant*". It included descriptions of new species and 43 plates showing cephalopods 'in living color'. The monograph appears to be of relatively minor scientific importance. However, Vérany's illustrations inspired depictions of cephalopods as both a beast and as beauties by important literary and artistic personalities. Here, first the life of Vérany will be sketched and examples of his striking illustrations of cephalopods 'in living color' given. Then the use by Victor Hugo, the 19th century French novelist, of one of Vérany's illustrations of an octopus to depict the ferocious beast in his 1866 novel *Toilers of the Sea* (*Les Travailleurs de la mer*) will be shown. The novel was a major contribution to the popular image of cephalopods as beasts. Not long after, in the 1870's, Vérany's illustrations were used by the renowned Blaschka glass workers to produce beautiful glass models of cephalopods. Ernst Haeckel, in his famous *Art Forms in Nature* (*Kunstformen der Natur* 1899-1904), depicted Vérany's squids as beauties of nature. Although rarely acknowledged, Vérany's lasting legacy with regard to cephalopods may be his illustrations, rather than his descriptions of new species.

KEYWORDS. scientific illustration, Victor Hugo, Ernst Haeckel, octopus, squid, Blaschka glass models.

Introduction

Jean-Baptiste Vérany was a 19th century naturalist. He was, in his time, the well-known naturalist of Nice (France). He aided, and worked with, visiting scientists of considerable importance such as Franco Bonelli, Rudolf Wagner, Albert von Kölliker, and Carl Vogt. Vérany founded the first museum of Nice, a natural history museum, the *Muséum d'Histoire Naturelle de Nice*. He described many new species from the Mediterranean Sea and in 1851 published his major scientific contribution, a lavishly illustrated monograph on cephalopods (octopuses and squids) of the Mediterranean Sea. Today, outside his native city of Nice, Vérany is a largely forgotten figure. His name is perhaps vaguely familiar to zoologists who work on marine mollusks but his monograph is rarely cited in the scientific literature (only 50 times since 1857!). Here the case will be made for considering Vérany's lasting legacy to be his artistic work rather than his scientific contributions. This is because Vérany's remarkable depictions of cephalopods in his 1851 monograph eventually found their way into a surprising variety of works. Of these works, three stand out and will be the primary focus of this essay. The first was the use by Victor Hugo of one of Vérany's octopuses as the model for his giant octopus, a beast, in his 1866 novel *Toilers of the Sea* (*Les Travailleurs de la mer*), first noted by Rollier and Prévost in 2009. It will be shown that Victor Hugo's 'beast', 'La Pieuvre' was a significant contribution to the popular myth of cephalopods as aggressive, dangerous animals. The second was the transformation of many of Vérany's illustrations into 3-D objects, glass models, by the Blaschka in the 1870's and 1880's. Through their models, the remarkable morphologies and colors documented by Vérany are today still on display in many museums. The third was the adaptation of two of Vérany's squids and an octopus as examples of art forms, beauties of the animal world, by Ernst Haeckel in his *Art Forms in Nature* (*Kunstformen der Natur*) in 1899-1904. A brief introduction to Jean-Baptiste Vérany, with a special focus on his scientific contacts, will be provided and many examples of his remarkable illustrations of

cephalopods will be shown. Then, how Vérany's illustrations were used to show cephalopods first as a beast, then as animals with remarkable morphologies, and eventually as beauties will be documented.

Jean-Baptiste Vérany (1800-1861) and his Scientific Art

The following account, like all existing accounts of the life and work of Jean-Baptiste Vérany, relies somewhat on a 1910 biography by Pierre Isnard (Isnard 1910a,b). He was Vérany's great grandson, a lawyer and himself a part-time naturalist. It was published in two parts in a local magazine *Nice Historique*. However, interested readers should be warned that the biography by Isnard is an inaccurate account. It contains errors, omits mentions of important personalities, gives some dates that are very improbable, provides an incomplete listing of Vérany's publications, and includes few references to original sources.

Jean-Baptiste Vérany was born on February 28, 1800 and was one of the 18 children born by Thérèse Vérany. His father, Trophime Vérany, was a very well to do pharmacist and sent his son Jean-Baptiste to the University of Torino to study chemistry. He obtained his degree as a pharmacist-chemist in 1819 and returned to Nice. In 1822 the professor of Zoology at the University of Turino, Franco Bonelli (1784-1830), visited Nice on a voyage to explore the fauna of Nice. Bonelli was the first scientific personality to play a role in the development of Vérany's career. The young Vérany was working in his father's pharmacy when he agreed to act as a guide and aid Bonelli in his collecting of specimens.

Working with, and for, Bonelli appears to have been responsible for Jean-Baptiste Vérany's turn to studies of natural history. Bonelli was a relatively important biologist of the time (e.g., Forgione 2020). As a student he attended the classes of George Cuvier in the *Jardin des Plantes* in Paris. In Torino, he was not only the Professor of Zoology but also the Keeper of the Natural History Museum of Zoology, a member of the Royal Academy of Sciences of Torino, and an expert on both birds and insects. However, he was interested in nearly all groups. In the 1820's he began collecting marine specimens of the Piedmont Region (which includes Nice). From 1822 to 1825 Vérany collected and sent various marine specimens to Bonelli (Vérany 1851). Vérany credits his discovery of the elegance of the colors and forms of cephalopods to the requests of the Torino professor for marine specimens, and that he decided to concentrate his efforts on mollusks in 1824 (Vérany 1851). By 1826, Vérany had definitively abandoned the pharmacy trade to become the assayer of gold and silver for the city of Nice, allowing him time to devote to his studies of natural history.

The second important personality in the story of Jean-Baptiste Vérany's cephalopod studies was Rudolf Wagner (1805-1864), another well-traveled naturalist, a professor of zoology at the University of Erlangen (Germany). It is unclear when they met or how long they worked together. Vérany sent an octopus he believed was a new species to Wagner in 1828 and Wagner named it *Octopus verany* (Wagner 1829). Notably, Wagner described Vérany as his 'disciple' and recommended him to naturalists visiting Nice (Wagner 1833). According to Vérany (1851), it was through Wagner that he came into contact with the Baron de Férussac, the third important personality in the development of Vérany as an expert in cephalopods.

Baron Férussac (1736-1836) took up studies of mollusks where his father had left off in cataloging terrestrial and freshwater mollusks. In this effort he was joined by Alcide d'Orbigny (1802-1857). Férussac's interests had extended to cephalopods by the 1830's. Perhaps on the advice of Wagner, Vérany sent specimens, illustrations, and detailed descriptions of two new species of squids he had found to Férussac in 1834. These were presented to the Academy of Sciences in Paris by Férussac in November of 1834. He named one species (at Vérany's request), for Franco Bonelli, the new species *Cranchia bonnelli* (adding a 'n' to Bonelli's name). The other species Férussac named for Vérany, *Loligopsis veranii* (changing 'y' to 'i' to Vérany's name). One of the surviving

early illustrations by V  rany, preserved in the *Mus  um d'Histoire Naturelle de Nice*, is of the squid F  russac named for him, found in August 1834. It is perhaps a copy of one of the illustrations V  rany sent to F  russac (fig. 1). It is a quite remarkable work as the squid is shown in 3/4 profile, peering at the viewer, rather than a ventral or dorsal depiction, as a typical anatomical specimen. According to Clyde Roper (renowned squid taxonomist), the orientation in the figure is very unusual. We do not know which illustrations F  russac presented to the Academy of Sciences in Paris. Regardless, there was a wide distribution of the descriptions of the new species, credited as discoveries by V  rany; they appeared in 3 publications (F  russac 1834, 1835a,b); it is likely that the articles established V  rany as an authority on mollusks. Interestingly though, V  rany's first scientific publication was not on cephalopods but rather notes on a nudibranch, a sea slug (V  rany 1834).



Fig. 1. V  rany's illustration of the squid named for him by F  russac, *Lolligopsis veranii*. The original labels at the bottom note that the specimen was found on the beach in Nice, August 14, 1834. The notation '***Lolligopsis veranii*, Ferussac.**' must have been added later as the name dates from November 1834. The depiction is very unusual as the animal is shown in 3/4 profile, peering at the viewer, with the tentacles down. The dimensions of the original are 24 x 16 cm. Reproduction courtesy of the Mus  um d'Histoire Naturelle de Nice.

In August of 1836 Jean-Baptiste V  rany joined an expedition sent to South America by the King of Sardinia aboard the vessel *Euridice*. The expedition ended with the return of the *Euridice* to Genoa in 1838, but very little is known about the activities of the expedition in general, and virtually nothing about V  rany's activities (Valensi et al. 2009). From V  rany himself we know that during his voyage from Nice to join the expedition in July of 1836, a sailor brought him an odd squid speared at the surface and V  rany would later describe it as a new species, *Histioteuthis ruppelli* (V  rany 1851). He also described two species of squids from his voyage as found in the Atlantic (V  rany 1839a), one caught by a sailor and another from the stomach of a dolphin. V  rany did not give the dates of these latter 'collections' in his article, only the latitude and longitude, but notes on unpublished illustrations held in the Mus  um d'Histoire Naturelle de Nice indicate that the species he named *Loligopsis bonplandii* was found on June 23rd of 1837 at 29  N, 39  W and another the species he found on July 8th of 1837 at 39  N, 20  W. The locations and dates indicate that the ship was headed northwest in the summer of 1837 presumably then on his way to back to Europe before the return of the *Euridice*. The only other evidence of his travels are a few specimens of birds from Brazil and Paraguay in the Natural History Museum of Nice and in the Natural History Museum of Torino, catalogued as from V  rany (Valensi et al. 2009).

Jean-Baptiste V  rany first illustrations in works that he himself authored were in 2 short back-to-back articles in *Memorie della Reale Accademia delle Scienze di Torino* (Memoires of the Royal Academy of Sciences of Torino). The first article (V  rany 1939b) was entitled "*M  moires sur six nouvelles esp  ces de c  phalopodes trouv  es dans la M  diterran  e    Nice*" (Memoir on six new species of cephalopods found in the Mediterranean in Nice) and the second, mentioned above (V  rany 1839a) was on the species he found on his return trip from South America, entitled "*M  moire sur deux nouvelles esp  ces de c  phalopodes trouv  es dans l'oc  an*" (Memoir on two new species of cephalopodes found in the ocean). The plates (fig. 2) were, not surprisingly, quite striking. His articles were described in some detail in the Parisian scientific newspaper '*L'Echo du Monde Savant* ' (anon. 1840a).



Fig. 2. The plates from Vérany's 1839 articles. The top 2 rows show the six new species found in the Mediterranean Sea in Nice and the bottom two plates are from his article on new species found in the Atlantic Ocean.

The scientific illustrations of Jean-Baptiste Vérany may have become widely known with the publication of Férussac and d'Orbigny's classic (and massive) monograph "*Histoire naturelle et particulière des Céphalopodes Acétabuiféres*" (Férussac & d'Orbigny 1835-1848). The complete work consisted of a text volume of over 500 pages and a separate volume of 144 plates. It had a complicated publication history as it was begun by Férussac and eventually finished by d'Orbigny (Winckworth 1942). Among the plates were 5 plates by Vérany containing illustrations 'from life, in living color' (fig. 3) and they stood out from the other plates. For example, many of the other plates were black and white illustrations while Vérany's were all in color. Also, Vérany's illustrations showed the animals in motion, which most of the other plates did not. One plate was unique in bringing the animal to life: Vérany illustrated it swimming, resting in tranquility, contracted in irritation, asleep, and walking on the bottom (fig. 3, lower panel, far left). No other plate in the monograph showed a species in variety of poses and situations. Another plate showed juvenile forms along with the adult. It is no exaggeration to state that Vérany's illustrations of cephalopods did not simply show the anatomical features that distinguished a particular species, he showed the animals alive.

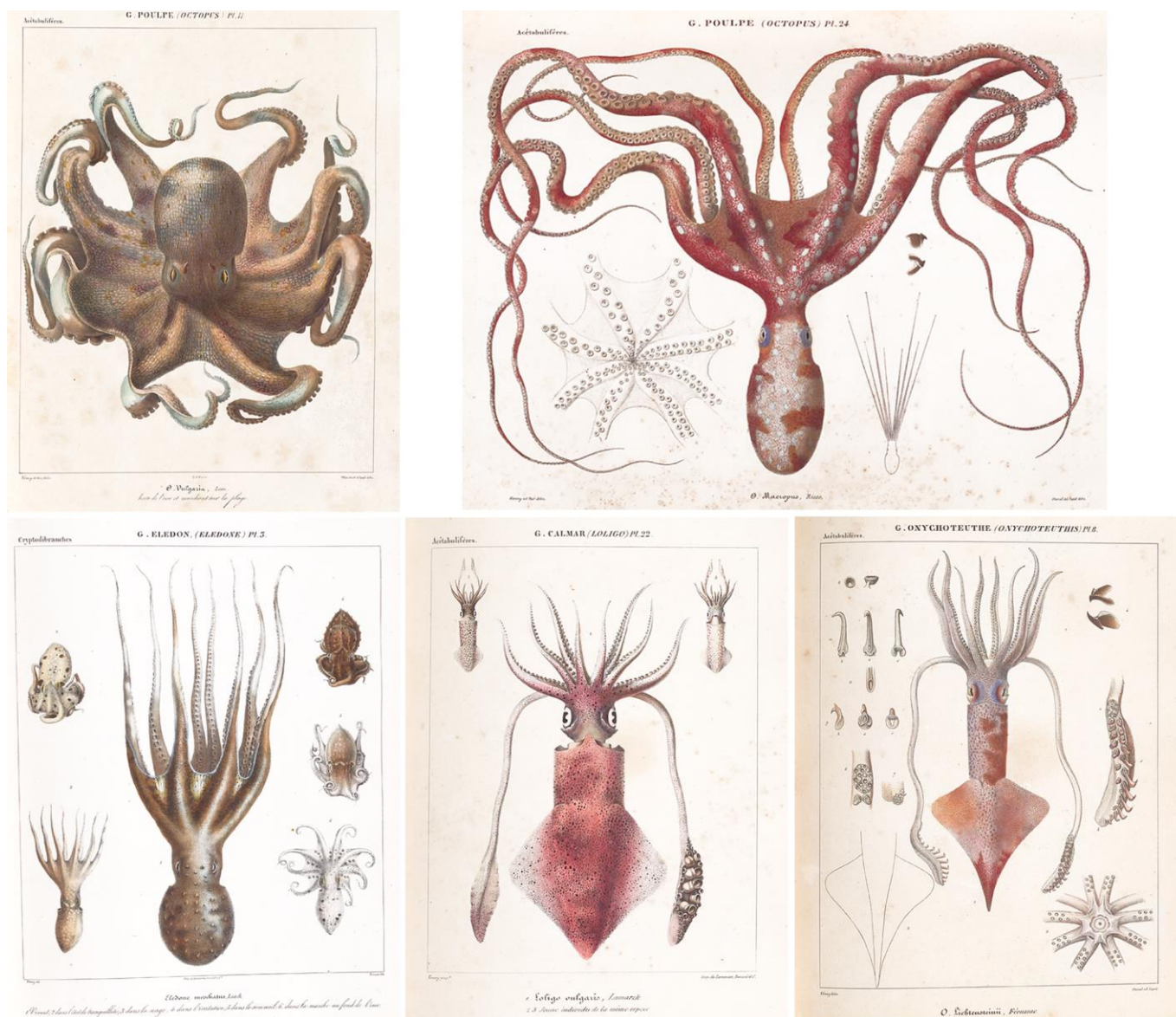


Fig. 3. Verany's illustrations of cephalopodes appeared in Férussac's and d'Obigny's monograph "*Histoire Naturelle et particulière des Céphalopodes Acétabulifères*". The top left plate shows *Octopus vulgaris* "walking on the beach". The top right plate shows *Octopus macropus* waving its tentacles. The bottom left plate shows *Elodone moschatus* in a remarkable variety of poses: the large central figure is 'living', the top right, 'in a state of tranquility', bottom right 'swimming', top left 'irritated', middle left 'sleeping' and bottom left, 'walking on the bottom'. The middle bottom plate shows the squid *Loligo vulgaris* with 2 'young individuals of the same species'. The bottom right plate shows the squid *Onychoteuthis lichtensteinii*; it is a good example of a standard illustration, like most of the plates in the monograph, showing anatomical details.

On his return from the *Euridice* expedition Vérany assumed the office of Assayer in Genoa and resided there until he retired in 1852. It was during his time in Genoa that he worked on his major contribution "*Mollusques méditerranéens; observés, décrits, figurés, et chromolithographiés d'après le vivant*" published in parts from 1847 to 1851. The first signs of his monograph date from 1840 when he presented some of his illustrations and his classification system at the second meeting of Italian scientists in Torino in September. The beauty of the illustrations were noted in the Italian press, in *La Fama* (anon. 1840b). The only portrait of Jean-Baptiste Vérany, undated, appears to be from about the time his monograph was published, at about age 50 (fig. 4).

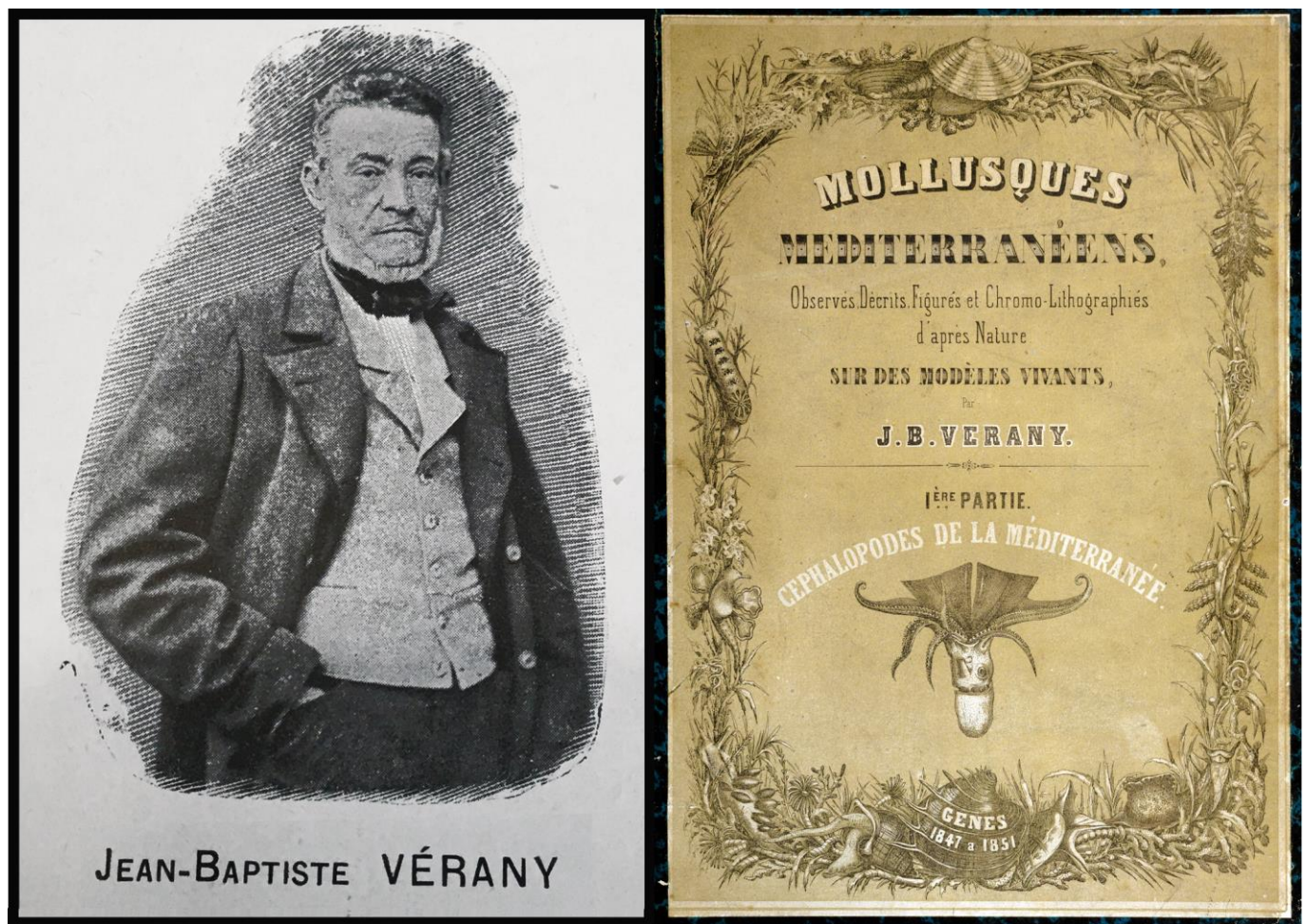


Fig. 4. The only existing portrait of Jean-Baptiste Vérany, undated. However, it appears to date from about the time his monograph on cephalopods was published, 1847-1851, when Vérany was about 50 years of age.

Vérany's monograph on cephalopods of the Mediterranean Sea was the first part of two planned works on mollusks of the Mediterranean Sea. Its full title was then "*Mollusques Méditerranéens, Observés, Décrits, Figurés et Chromo-Lithographiés d'après Nature sur les Modèles Vivants, 1ère Partie, Céphalopodes de la Méditerranée*" (Mediterranean Mollusks Observed Described Illustrated after Nature from Life, first part, Cephalopods of the Mediterranean). The planned second part, on other mollusks (pteropods, nudibranchs, etc.), was in progress when Vérany died. The cephalopod monograph is occasionally cited as simply "*Mollusques Méditerranéens*". As indicated by the title, Vérany placed considerable importance on the illustrations in his monograph consisting of 43 plates, all but one in color. Most were labeled "*ex vivo*" (after life); a few were labeled "*ex vero*" (after truth) indicating that the colors shown were what Vérany believed they should be of a living specimen. A selection from the 43 color plates is shown in figure 4. The selection was made to show the range of colorful morphologies in Vérany's plates.

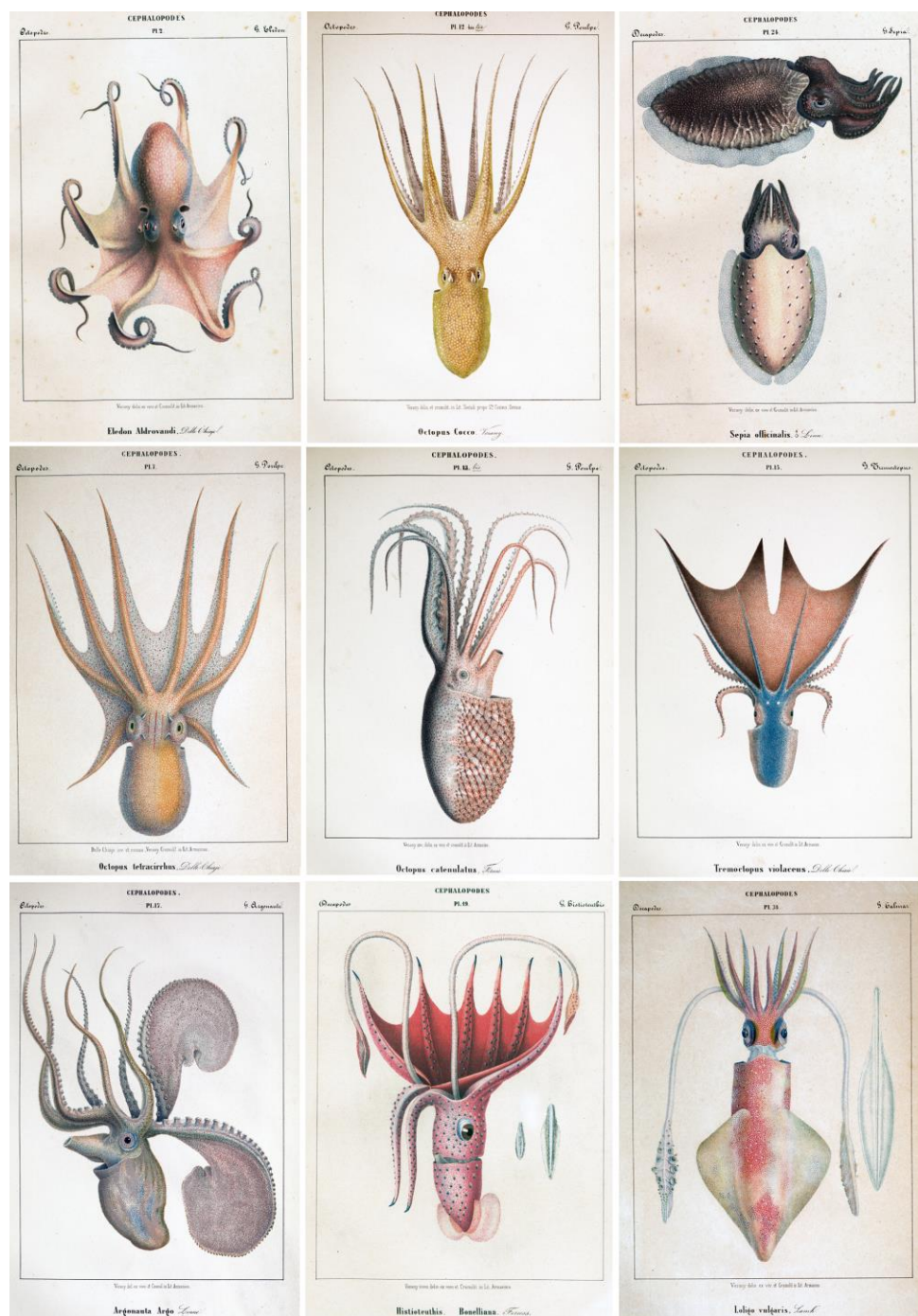


Fig. 5. A selection from the 43 plates of the monograph of Jean-Baptiste Vérany (Vérany 1851) showing range of cephalopod morphologies shown. Most are labeled 'ex vivo' indicating the illustration was based on a living organism.

When Vérany returned to Nice he devoted himself full time to studies of natural history, aiding visiting naturalists, and his natural history museum. In particular, Vérany worked with Carl Vogt (1870-1895) professor of zoology of the University of Geneva. Together they investigated the reproduction of cephalopods, identifying the detachable male sex organ, previously thought to be a parasite found on the females. Their surprising report in French (Vérany & Vogt 1852) was also published in English as well (Vérany & Vogt 1853). Vogt, in his first monograph on invertebrates of the plankton in the Mediterranean Sea (Vogt 1854) recommended that any naturalist visiting Nice seek out Vérany, as had Wagner over 20 years earlier (Wagner 1833). Among the distinguished visitors Vérany aided in these later years was Albert von Kölliker (1870-1905), Professor of Physiology and Anatomy of the University of Würzburg. He published in 1844 a monograph on the development of cephalopods (Kölliker 1844). In 1856 he went to Nice with a group of students, including a young Ernst Haeckel. According to Haeckel's correspondence, Vérany aided them in

their sampling, lending them equipment, and the visit turned out to be of considerable importance in the career of Haeckel as it was his first introduction to many organisms of the plankton (Dolan 2019).

Jean-Baptiste V  rany's last published work appeared in 1862. It was a return to what could be called traditional natural history, a catalog of the fauna of the region of Nice, the Maritime Alps, both terrestrial and aquatic (V  rany 1862). Jean-Baptiste V  rany died suddenly a few years later on March 1, 1865 of an "apoplectic attack". V  rany worked for decades on an interesting group of animals, produced substantial monographs, and aided major scientific personalities of his time. He is today, undeniably, largely forgotten in the scientific community because his scientific contributions are, in today's light, minor. This is because most of the species he described as 'new' are today known to species that were described previously under a different name. Hence he credited with relatively few discoveries. However, it will be shown in the following sections that the remarkable illustrations of V  rany have had a significant, albeit little known, influence on our visions of cephalopods.

A V  rany Cephalopod as an Archetypal Beast by Victor Hugo

Across many cultures, and times, the deep sea has been portrayed as inhabited by monsters, ranging from serpents to giant sharks and black-headed creatures, perhaps indicating an instinctive fear of the deep sea (Jamieson et al. 2020). Prominent among the mythical beasts is the Kraken, a giant octopus, of Norse mythology. The Kraken was an octopus of a size capable of devouring an entire ship with a taste for human flesh and its actual existence was accepted by Nordic naturalists up to and including Linnaeus in the late 18th century (e.g., Salvador & Tomotani 2014). Thus, the use of a giant octopus as a monster to be battled by the protagonist in Victor Hugo's 1866 novel, "*Les Travailleurs de la Mer*" (Toilers of the Sea), was not an original invention. His illustration of the giant octopus, as the frontispiece of the fourth part of his novel, was not original either. It was identified as 'inspired' by the illustration of *Octopus macropus* in plate 10 of V  rany's 1851 monograph by Rollier and Pr  vost (2009). The drawing of an octopus by Hugo forming the initials "V" and "H" appears to owe its origin to V  rany's portrayal of *Octopus macropus* (fig. 6), an assessment accepted by Hugo scholars (e.g., Campas 2019).



Fig. 6. The Octopus of Victor Hugo's novel "*Les Travailleurs de la mer*" (Toilers of the Sea). From left to right: The frontispiece illustration of the novel showing the protagonist battling a giant octopus; The illustration "*La Pieuvre - V.H.*" of the fourth part of the novel, "*Les Doubles-Fonds de l'Obstacle*" with its tentacles forming the initials "V" and "H" above its head. According to Rollier and Pr  vost (2009), the model for Hugo's octopus was V  rany's *Octopus macropus*, plate 10 in V  rany 1851; the actual size of the animal is far from gigantic, it is about 1 m total length (V  rany 1851).

Although Victor Hugo's use of octopus as a beast was not original, there is substantial evidence that it revived a long-dormant image of cephalopods as aggressive, dangerous animals. Hugo's characterization of the octopus was severely criticized by an English naturalist, Henry Lee in his 1875 book *"The Octopus; the 'Devil-Fish' of Fiction and Fact"*. Lee described in some details the various misconceptions concerning the known behaviors of octopuses, generally timid creatures, singling out the portrayal of an aggressive octopus by Hugo as particularly false. Oddly enough, the octopus in Hugo's novel has also been singled out by a psychiatrist, Jacques Schnier, as not only a beast, but also a classic example of a mythical castrator (Schnier 1956).

Shortly after the appearance of Victor Hugo's novel, crowds appeared to see the octopus in the Grand Aquarium of Paris (Millet 1866). As shown in figure 7, Hugo's image of an octopus as a giant combative beast appeared on the cover of a popular magazine in 1866, and not long after, quite similar images appeared in Jules Verne's 1870 *"Vingt Mille Lieues sous les Mers"* (20,000 Leagues Under the Sea). According to Heuvelmans (1958), the giant ferocious octopus or squid has, in modern mythology, completely replaced the dragon of medieval times and this is due largely to first, Hugo's octopus, and second, the giant squid of Jules Verne. The importance and persistence of the Hugo's descriptions of the octopus as an aggressive, dangerous animal in *"Les Travailleurs de la Mer"* is evidence by a passage in *"The Silent World"* by Jacques Cousteau. The battle of Hugo's protagonist is specifically mentioned as accounting for great trepidation in Cousteau's first encounter with an octopus while scuba diving (Cousteau 1953). In *"La Mer Vivante"* (Petron & Lozet 1974), the caption of a photograph of *Octopus vulgaris*, reads *"Petit animal sympathique dont Victor Hugo a réussi à faire un monstre"* (A nice small animal who Victor Hugo managed to make into a monster). *'Toilers of the Sea'* has been labeled as "...literature's most sensational and perverse account of the 'devil-fish'" (Ellis 1994). An illustration appropriated from Vérany by Hugo, without any attribution, was used to support the false but oddly persistent image of the octopus as an aggressive animal, a beast.

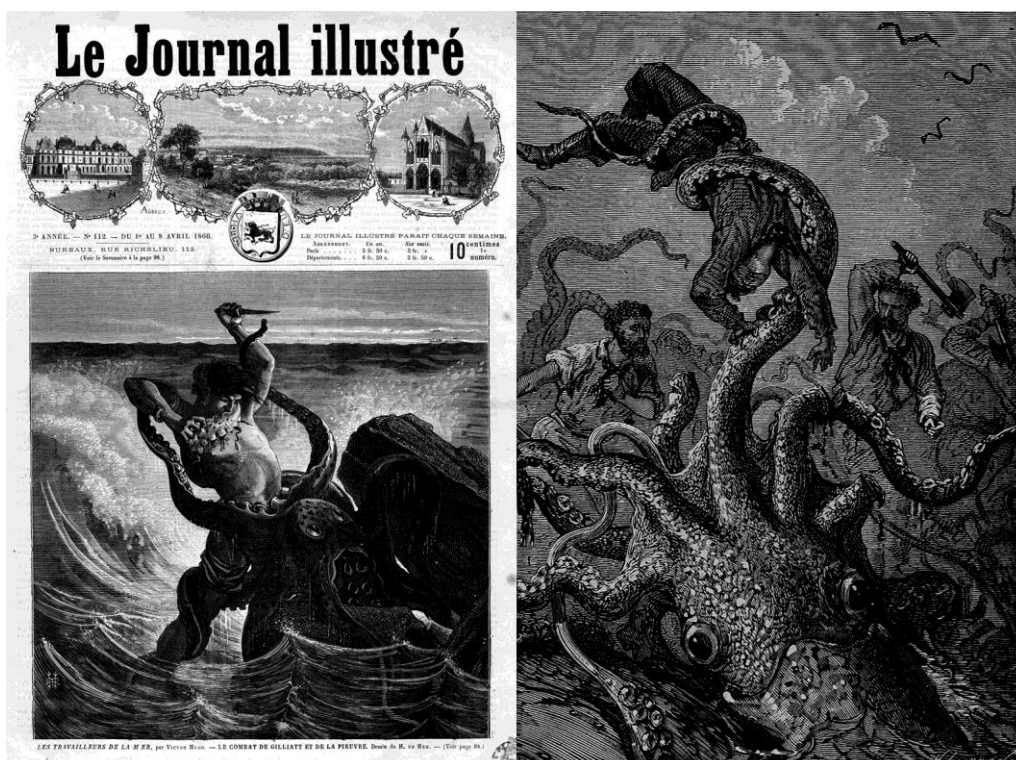


Fig. 7. The oddly persistent reputation of cephalopods as monstrous, aggressive, beasts has credited to Victor Hugo and Jules Verne. The right panel is the cover of the 1866 April 1st issue of the popular magazine, *Le Journal Illustré*, featuring a battle scene from Victor Hugo's 1866 *'Toilers of the Seas'* and the left panel shows a similar scene from Jules Verne's 1870 *'20,000 Leagues Under the Sea'*.

Much has been written about the amazing glass models of flowers and invertebrates created by the father-son team of the Blaschkas (e.g. Wiley 1897; Ross-Wilcox et al. 2003; Sigwart 2008; Harvell 2019). The father, Leopold Blaschka (1822-1895), of a distinguished family of glassworkers in Bohemia, began making glass models of flowers for himself as a young man. He was asked to make glass models of sea anemones for use in aquaria as the living animals were difficult to maintain. Blaschka first marketed glass sea anemones with aquaria to be filled with freshwater as a simple alternative to actual seawater aquaria for both elegant salons and educational institutions (Blaschka 1864). Some of his sea anemones were used to populate dry aquaria (Reiling 2002). Thus began a business that he would eventually pass to his son Rodolf Blaschka (1857-1939) and would supply thousands of intricate glass models of a large variety of invertebrates to universities and natural history museums throughout the world from 1866 to 1889 (Ruggiero & Larson 2017). Originally, the Blaschka invertebrate models were conceived and widely used as teaching aids to show accurately the morphologies and colors of delicate marine animals that are deformed and bleached with typical preservation techniques (Dyer 2008). Today, the glass models are considered as precious art objects (Häder 2012), meriting careful restoration (e.g., Meechan & Carter 2006; Brierly 2009; Rydlova & Kopecka 2016; Astrid & van Giffen 2017).

Cephalopods are prominent among the Blaschka glass models of animals. In their Ward 1878 catalogue, 49 cephalopod models were listed among the 630 models of marine invertebrates offered (Ward 1878). Only a few were added to the catalogue in later years and production of models of all marine invertebrates ended in 1890, in favor of producing models of flowers. For their models of invertebrates, the Blaschkas frequently used published illustrations, and as noted by Reiling (1998), many of their drawings are easily matched to their sources. However, simply based on the species of cephalopods listed in the 1874 Blaschka catalogue, a reliance on Vérany's 1851 monograph is apparent. The list of cephalopod models offered coincides almost exactly with those shown in Vérany's plates.. With regard to the cephalopod models, the existing Blaschka drawings show that many, if not most, of the cephalopod models were indeed based on Vérany's illustrations. The existing archives include 39 copies the Blaschkas made of the illustrations in Vérany's 1851 monograph, most with notes identifying the Vérany source plate. These are held by the Rakow Research Library of the Corning Museum of Glass and the drawings are available online through the website of the Corning Museum of Glass by searching "Blaschka design drawings". As shown in Figure 8, the copies made by the Blaschkas of Vérany's illustrations were faithful reproductions and clearly were the basis for many of the glass models of cephalopod they produced. Vérany's 1851 monograph is listed among the many scientific works used by the Blaschkas to make their glass models of marine invertebrates, without however, specifying which works were used to produce models of which taxa (Reiling 2000). Interestingly, based on the correspondence of the Blaschkas, some of the reference works they used were leant to them by Ernst Haeckel in 1877 (Reiling 2000). There is no documentary evidence that Haeckel leant the Blaschkas works in earlier years when the 1874 catalogue of glass models was prepared. However, it is tempting to speculate that the Blaschkas used a copy of Vérany's 1851 monograph leant to them by Haeckel, because, as we will see in the following section, Haeckel himself used Vérany's illustrations.

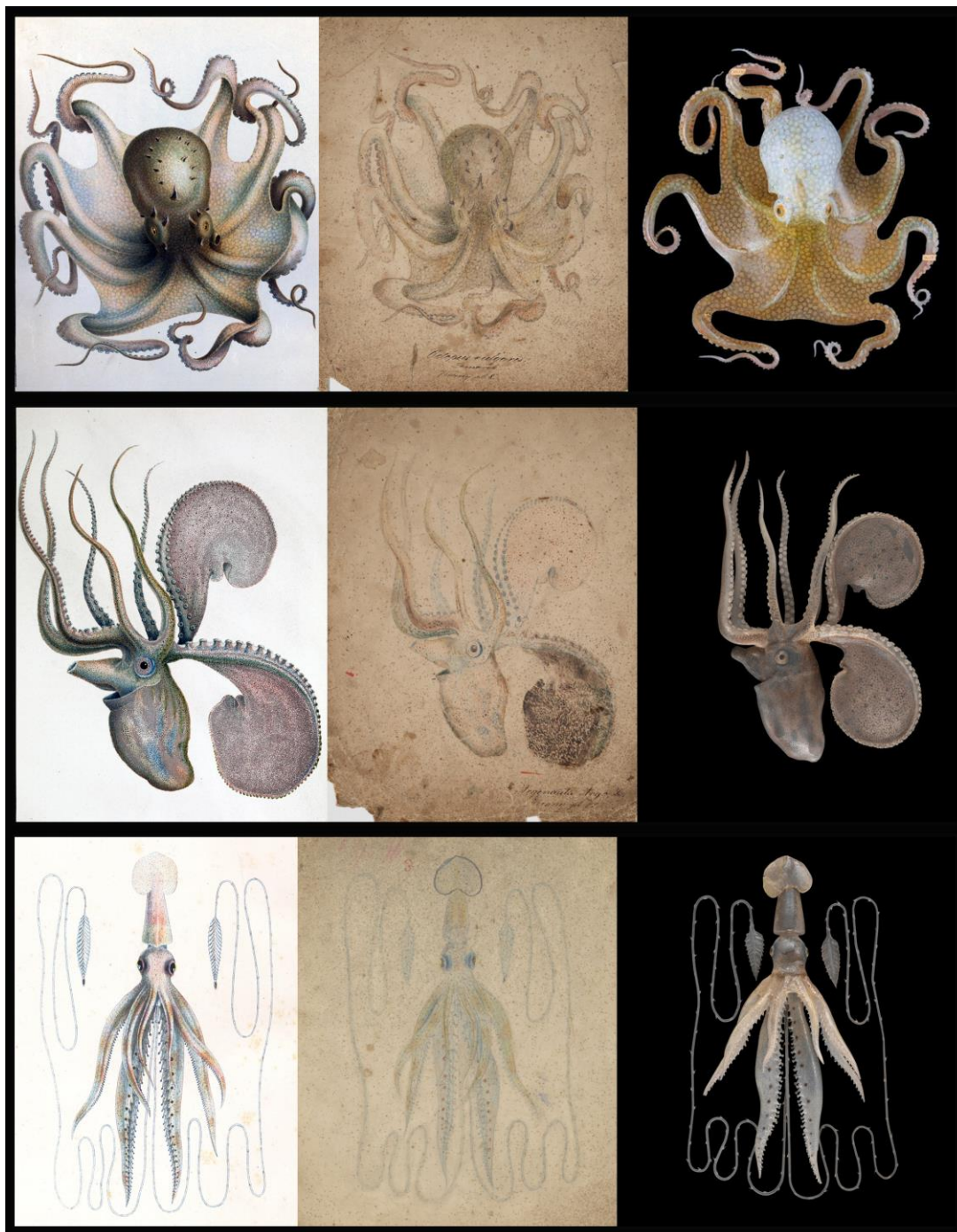


Fig. 8. Evidence that the Blaschka glass models of cephalopods were based on V  rany's illustrations. The left column shows V  rany's illustrations from his 1851 monograph; the middle column shows the Blaschka design drawings; the right column shows the glass models. The top row illustrations are of *Octopus vulgaris*, middle row shows illustrations are of the female *Argonauta argo*, the bottom row shows illustrations of the species F  russac (1834) named for V  rany as *Loligopsis veranii*, now known as *Chroteuthis veranyi*. The model shown of *Octopus vulgaris* is held in the Natural History Museum (London); those of *Argonauta argo* and *Loligopsis veranii* are held in the Corning Museum of Glass. The image of the model of *Argonauta argo* was reversed to conform with the orientation of the illustrations.

The Blaschka glass models are held today in dozens of museums around the world (Ruggiero & Larson 2017). The largest collection of the cephalopod models is likely that of Cornell University as it holds at least 29 of the 49 models listed in the 1878 catalogue. Images of their cephalopod models, showing in three dimensions, the surprising morphologies illustrated by V  rany, are available online through a dedicated website of [Cornell University](https://www.cornell.edu/blaschka). Some of the models are on permanent display in the Albert Mann Library of Cornell University and in the Corning Museum of Glass (USA). Considering that the models of cephalopods were widely used in university and college teaching,

and that they have been displayed in many museums, it is quite likely that, compared to V  rany's actual illustrations, many more people have been exposed to his artwork through the glass models of his cephalopods. However, it should be noted that for some species, the Blaschka models held today, and occasionally on display, vary considerably from specimen to specimen (Fig. 9) with some barely recognizable as based on V  rany's artwork. It is unclear if the differences in colors, for example, are original (they were made only when ordered), or the result of aging, later alterations and repairs, or restoration.



Fig. 9. Variability among the Blaschka models of *Argonauta argo* (female) held in different museums. The top left image, from Shaw et al. 2017, is the model held in the Canterbury Museum (New Zealand). The top right image, from Reisser 2013, is of the model held by the Natural History Museum (London), bought in 1883 (Miller & Lowe 2008). The bottom left is a restored, previously painted model held by the National Museum in Cardiff (Wales) from Meechan & Carter 2006. The bottom right is the model held by the Corning Museum of Glass bought in 1885.

V  rany's Cephalopods as Art Forms, Beauties, by Haeckel

Ernst Haeckel (1834-1919) was a major figure as a biologist, although today often under appreciated (Levit & Hossfeld 2019). Haeckel was also a very talented artist with some believing his lasting legacy to be his artwork rather than his scientific contributions (e.g., Maderspracher 2019). Relatively late in life, at age 75, he began publishing his influential art book '*Kunstformen der Natur*' (Art Forms in Nature). It appeared in two sets of 5 installments, each consisting of ten plates with text descriptions, from 1899 to 1904. The work popularized the beauty of living organisms, both plants and animals. Designated as his artistic *magnum opus* (Maderspracher 2019), it is well known for its influence on the Art Nouveau movement in the early 20th century and on particular artists such as Gustav Klimt (Celenza 2010) and architects such as Ren   Binet (Proctor 2002). For example, Haeckel's illustrations are credited with an increased use of geometric patterns and serpentine ornamentation (Celenza 2010).

Perhaps among the most serpentine of Haeckel's illustrations was his adaptations of two of V  rany's squids in plate 54 of his *Kunstsformen der Natur*. It was in the second set of installments, appearing in 1902. Haeckel's illustrations of two of the squids and one of V  rany's octopuses, while stylized, appear to be have been based on V  rany's 1851 plates (Fig. 10). This is because V  rany's 1851 plates are the only color illustrations of the species shown in full dorsal or ventral orientations, as in Haeckel's plate, that was available to Haeckel. Furthermore, Haeckel described all three as Mediterranean specimens in his text description. Interestingly, the two cephalopod species shown in the plate that are not clearly linked to V  rany, appear to be from the monograph by F  russac and d'Orbigny (1834-1843) in which some of the illustrations were by V  rany (fig. 2). We cannot know if Haeckel owned a copy of V  rany's 1851 monograph, but we do know that Haeckel knew V  rany. He mentioned V  rany in letters from his visit to Nice as student in 1856 and that he later re-visited Nice in 1864 to recuperate from the loss of his wife, when V  rany was still active. In any event, Haeckel's inclusion of V  rany's cephalopods in his book of art forms in nature, whether taken directly from V  rany or some other source, established V  rany's cephalopods as among the beauties of the natural world.



Fig. 10. Plate 54 of Ernst Haeckel's *Kunstformen der Natur* was dedicated to cephalopods. It shows two of V  rany's most remarkable squids. The central figure of Haeckel's plate, *Chiroteuthis veranyi*, is based on V  rany's plate 38 (bottom panel, far right). The top left figure in Haeckel's plate is *Histioteuthis r  ppellii* from V  rany's plate 21 (bottom panel far left). The octopus at the bottom left of Haeckel's plate, *Octopus vulgaris*, was likely re-drawn from V  rany's illustration in F  russac & D'Orbigny (1834-1843), plate 11 or the same illustration in V  rany 1851, plate 8 (bottom panel, center). The top left figure is *Pinnoctopus cordiformis*, redrawn from plate 10, figure 1 of F  russac & D'Orbigny (1834-1843) and the bottom right figure is *Octopus granulosus*, re-drawn from plate 6, figure 1, of F  russac & D'Orbigny (1834-1843).

Conclusion

The illustrations of Jean-Baptiste V  rany of cephalopods have been appropriated over the years in different manners and inspired portrayals of cephalopods as both beasts and beauties. However, V  rany has received very little attention or recognition. The uses of his illustrations appear to have always been without attribution. One will not find any works with illustrations noted as "after V  rany". The use of V  rany's illustrations without attribution continues today. Perhaps the most recent is in Drew Harvell's "*Sea of Glass: searching for Blaschkas' fragile legacy in an ocean at risk*". The title page of the 2019 paperback edition (fig. 11) includes V  rany's illustration of *Octopus macropus*, the same that Victor Hugo used! The title page illustration is not listed among the credited illustrations of the book. Thus, Jean-Baptiste V  rany's fabulous illustrations of cephalopods continue to be used today while their creator remains in the shadows. Hopefully with this essay some will have succeeded in shining a light on a very talented naturalist-artist.

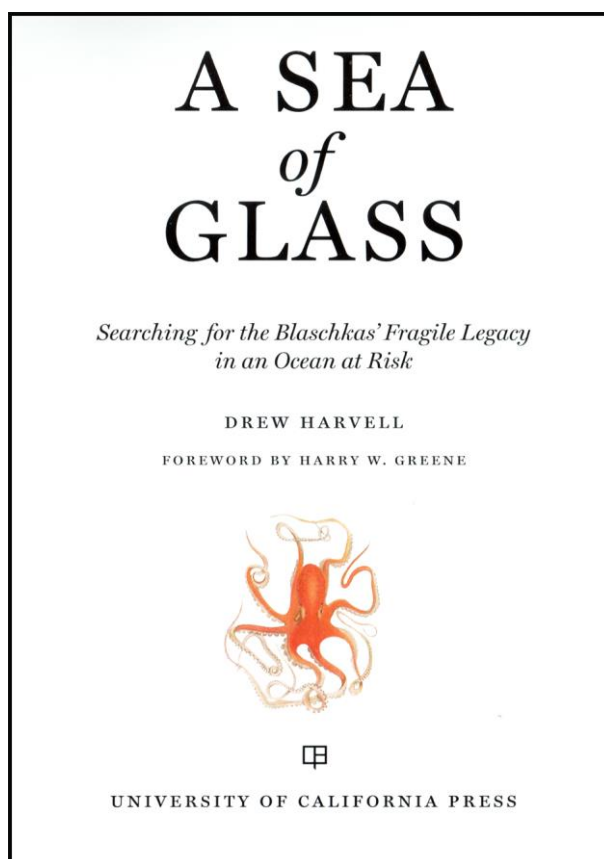


Fig. 11. The title page of the 2019 paperback edition of the book by Drew Harvell "*A Sea of Glass, Searching for the Blaschkas' Fragile Legacy in an Ocean at Risk*". The octopus shown is an exact copy of V  rany's *Octopus macropus*, plate 10 in V  rany 1851, the same illustration used by Victor Hugo (see fig. 6). As with all the adaptations of V  rany's artwork, the illustration is not credited to V  rany.

Acknowledgements

Emmanuel Reynaud kindly provided valuable comments on a previous version of the manuscript and also supplied copies of important, and exceedingly rare, Blaschka references. Jo  lle Defa   patiently provided multiples accesses to the V  rany holdings in the library of the *Mus  um d'Histoire Naturelle de Nice* and also invaluable encouragement. Comments and corrections of an anonymous reviewer are gratefully acknowledged. However, I retain full responsibility for all errors of fact, omission, and interpretation.

References

- Anon. 1840a Zoologie. Nouveaux céphalopodes de la Méditerranée. *L'Echo du Monde Savant*, n° 546, 13 June, p 338.
- Anon. 1840b Zoologia ed Anatomia comparata, Ottava tornata. *La Fama*, n°117, 28 September, unpaginated
- Astrid, N., van Giffen, R. 2017. The case of the hydrating hydra: examination and treatment of a Blaschka glass invertebrate model. in Hamilton, E., Dodson, K. (eds) "*Objects Specialty Group Postprints, Volume Twenty-Four, 2017*", pp 351–371.
- Blaschka, L. 1864. *Marine Aquarien mit Aktinien oder Strahlblumen – Polypen zur Zierde eleganter Zimmer wie zur Belehrung für Unterrichts- Anstalten und für Museen. Nova Acta Leopoldina*, 30:55-56.
- Blaschka, L. 1874. *Wenig bekannte Seethiere*, Leopold Blaschka, Dresden. Dritte Auflage
- Brierley, L. 2009. Art forms in nature: examination and conservation of a Blaschka glass model of the protozoan "Aulospaera elegantissima". *Studies in Conservation*, 54:255-267.
- Campmas, A. 2019. La Taxonomie à l'épreuve du chaos: Hippolyte Crosse, Victor Hugo et la pieuvre. *French Studies*, 73: 351-366.
- Celenza, A.H. 2010. Vienna's golden knight: A tale of science, symphonies, and scandalous art. *The Hopkins Review*, 3:464-495.
- Cousteau, J. Y. 1958. *The Silent World*. Harmondsworth, U.K.: Penguin.
- Dolan, J.R. 2019. Ernst Haeckel's radiolarians and medusa: the influence of his visits to Villefranche on his science and his art. *Arts et Sciences*, 3, doi:10.21494/ISTE.OP.2019.0420
- Dyer, R. 2008. Learning through glass: The Blaschka marine models in North American post secondary education. *Historical Biology*, 20, 29-37.
- Ellis, R. 1994. *Monsters of the Sea*. New York: Alfred A. Knopf.
- Férussac, B. 1834. Notice sur deux nouvelles espèces de Céphalopodes appartenient aux genres Calmaret et Cranchie. *L'institut, journal Générale des Sociétés et Travaux Scientifique de la France et de l'Etranger*, n°77, 1 November, p 333.
- Férussac, B. 1835a. Sur deux genres de Céphalopodes encore peu connus, les genres Calmaret et Cranchie, et sur une nouvelle espèce fort remarquables de chacun de ces deux genres. *Magasin de Zoologie*, 5, Classe V. Pl. 65 et 66, unpaginated.
- Férussac, B. 1835b. Extrait d'une note sur des Céphalopods nouveaux. *Annales des Sciences Naturelles, Zoologie*, série 2, vol 3: 339-346.
- Férussac, A. E., Orbigny, A. D. D. (1835-1843). *Histoire naturelle, générale et particulière des céphalopodes acétabuières vivants, et fossiles: comprenant: la description zoologique et anatomique de ces mollusques, des détails sur leur organisation, leurs moeurs, leurs habitudes, et l'histoire des observations dont ils ont été l'objet depuis les temps les plus reculés jusqu'à nos jours*. pp.[1–96], i-lvi, 1–361, atlas with 144 plates. Paris, Baillière,
- Forgione, F. 2020. Evolution as a Solution: Franco Andrea Bonelli, Lamarck, and the Origin of Man in Early-Nineteenth-Century Italy. *Journal of the History of Biology*, 53:521–548. <https://doi.org/10.1007/s10739-020-09617-2>
- Häder, S. 2012. Kunstformen als Wissensrepräsentationen. Die naturwissenschaftlichen Glasmodelle von Leopold (1822-1895) und Rudolf (1857-1939) Blaschka - In: Priem, K., König, G.M., Casale, R. (eds) *Die Materialität der Erziehung. Kulturelle und soziale Aspekte pädagogischer Objekte*. Weinheim: Beltz. pp 200-2017. doi: 10.25656/01:7211
- Harvell, C.D. 2019. *A Sea of Glass: Searching for the Blaschkas's Fragile Legacy in an Ocean at Risk*. Oakland: University of California Press. (paperback version of 2016 hardack book).
- Haeckel, E. 1899-1904. *Kunstformen der Natur*. Leipzig und Wien: Verlag des Bibliographischen Instituts.
- Heuvelmans, B. 1958. *Dans le Sillage des Monstres Marins*. Paris: Editions Plon.
- Hugo, V. 1866. *Les Travailleurs de la mer*. Paris: Albert Lacroix et Cie.
- Isnard, P. 1910a. Jean-Baptiste Vérany (1800-1865), Le Musée Municipal d'Histoire Naturelle de Nice. *Nice Historique*, n° 519, 14-18.

- Isnard, P. 1910b. Jean-Baptiste Vérany (1800-1865), Le Musée Municipal d'Histoire Naturelle de Nice. *Nice Historique*, n° 519, 30-36.
- Jamieson, A. J., Singleman, G., Linley, T. D., and Casey, S. Fear and loathing of the deep ocean: why don't people care about the deep sea? *ICES Journal of Marine Science*, doi:10.1093/icesjms/fsaa234.
- Kolliker, A. 1844. *Entwicklungsgeschichte der Cephalopoden*. Zurich: Meyer und Zeller.
- Lee, H. 1875. *The Octopus; the 'Devil-Fish' of Fiction and Fact*. London: Chapman and Hall.
- Levit, G.S., Hossfeld, U. 2019. Ernst Haeckel in the history of biology. *Current Biology*, 29: R1269-R1300.
- Meechan, C., Carter, J. 2006. Nature in glass, the models of Leopold and Rudolph Blaschka. in: Butler, C., Davis, M. (eds) *Things Fall Apart: Museum Conservation in Practice*. Cardiff: National Museum and Galleries of Wales, pp 164-171.
- Maderspacher, F. 2019. The enthusiastic observer- Haeckel as artist. *Current Biology*, 29:R1272-R1276. <https://doi.org/10.1016/j.cub.2019.11.061>
- Millet, C.-A. 1866. *Le Grand Aquarium*. Paris.
- Miller, C.G., Lowe, M. 2008. The Natural History Museum Blaschka collections. *Historical Biology*, 20:51-62.
- Pétron, C., Lozet, J.B. 1974. *La Mer Vivante*. Paris: Denöel.
- Reiling, H. 1998. The Blaschkas' glass animal models: origins of design. *Journal of Glass Studies*, 40:105-126.
- Reiling, H. 2000. The Blaschkas' glass animal models: illustrations of 19th century zoology. *Scientiarum Historia: Tijdschrift voor de Geschiedenis van de Wetenschappen en de Geneeskunde*, 26: 131-143.
- Reiling, H. 2002. Glass models of soft bodied animals. The relation between Blaschka, Fric and the National Museum. *Časopis Národního muzea, Řada přírodovědná*, 171:81-84.
- Reisser, W. 2013. Glass Menagerie. *Patek Philippe Magasin*, 3:22-25.
- Proctor, R. 2006. Architecture from the cell-soul: René Binet and Ernst Haeckel, *The Journal of Architecture*, 11:407-424, doi: 10.1080/13602360601037818
- Rollier, B., Prévost, M.-L. 2009. "V" comme Victor ou "V" comme Vérany? *Revue de la BNF*, n° 33, pp 56-57.
- Ruggiero, A., Larson, K.A. 2017. The Blaschka legacy in worldwide collections. *Journal of Glass Studies*, 59:419-428.
- Rydlova, E., Kopecka, I. 2016. A Blaschka glass model of an octopus from the National Museum in Prague. *Journal of Glass Studies*, 58:245-252.
- Salvador, R.B., & Tomotani, B.M. 2014. The Kraken: when myth encounters science. *História, Ciências, Saúde – Manguinhos, Rio de Janeiro*, v.21, n.3, jul.-sept, p.971-994.
- Schnier, J. 1956. Morphology of a symbol: the octopus. *American Imago*, 13:3–31.
- Shaw, M.D., Szczepanski, J.Z., Murray, S.F., Hodge, S., Vink, C.J. 2017. *Records of the Canterbury Museum*, 31:5-84.
- Sigwart, J.D. 2008. Crystal creatures: context for the Dublin Blaschka Congress. *Historical Biology*, 20:1-10.
- Valensi, P. Roussel, B., Bidar, R., Rollier, B. 2009. Découvertes de restes de faunes quaternaires lors du percement du boulevard Carnot à Nice dans les années 1858-1859. Un paresseux géant caché derrière un éléphant au fond d'un tiroir.... *Annales du Muséum d'Histoire Naturelle de Nice*, 24:15-28.
- Vérany, J.-B. 1834. Notice sur la *Carinaria* et description. *Zoological Journal*, 5:325.
- Vérany, J.B. 1839a. Mémoire sur deux nouvelles espèces de céphalopodes trouvés dans l'océan. *Memorie della Reale Accademia delle Scienze di Torino, Serie Seconda, Tomo 1*, 99-101.
- Vérany, J.B. 1839b. Mémoire sur six nouvelles espèces de céphalopodes trouvés dans la Méditerranée à Nice. *Memorie della Reale Accademia delle Scienze di Torino, Serie Seconda, Tomo I*, 91-98
- Vérany 1851 *Mollusques méditerranéens; observés, décrits, figurés, et chromolithographiés d'après le vivant, 1ère Partie, Céphalopodes de la Méditerranée*. Genoa: Imprimerie des Sourdes-Muets.
- Vérany, J.-B. 1862. *Zoologie des Alpes-Maritimes ou Catalog des Animaux Observés dans le Département*. Nice: Imprimerie et Librairie Ch. Cauvin.

- Vérany, J. B., & Vogt, C. 1852. Mémoire sur les hectocotyles et les males de quelques céphalopodes. *Annales des Sciences Naturelles*, Vol. 3: 147-188).
- Verany, J.-B., Vogt, C. 1853. Memoir upon the hectocotyli and males of certain cephalopods. *Scientific Memoirs selected from the Transactions of Foreign Academies of Science, and from Foreign Journals. Natural History*, 1853: 119-154.
- Verne, J. 1869). *Vingt-mille Lieues sous les Mers*. Paris: Hachette.
- Vogt, C. 1854. Recherches sur les animaux inférieurs de la Méditerranée. 1. Sur les Siphonophores de la Mer de Nice. *Mémoires de l'Institut National Genevois*, 1:1-165.
- Wagner, R. 1829. Sur les céphalopodes de la Méditerranée. *Bulletin des Sciences Naturelles et de Géologie*, 19: 387-389.
- Wagner, R. 1833. Beiträge zur Kenntnifs der Cephalopoden des Mittelmeer's. *Zeitschrift für die Organische Physik*, 3:225-229.
- Ward H. 1878. *Catalogue of glass models of invertebrate animals*. Rochester (NY): H.A. Wards Natural Science Establishment.
- Wiley, F.B. 1897. *Flowers that Never Fade, an Account of the Ware Collection of Blaschka Glass Models in the Harvard University Museum*. Boston: Bradlee Whidden, Publisher.
- Winckworth, R. 1942. Notes on the publication of Férussac and Orbigny's Histoire des céphalopodes. *Proceedings of the Malacological Society*, 25:34-36.