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Distinction Project final paper

## The Beginning of a Journey

The idea for a database for the Dragon Research Collaborative (DRC), hereafter known as the Dragonbase, began to form after I heard about the DRC in one of my first classes at Roanoke College, HNRS 110: Heretics, Lunatics & Geniuses. I had Dr. Poli as a professor and she, like most professors, described her research group called the Dragon Research Collaborative, explaining how she had room for new people and projects within the group if any students wanted to join. The DRC is an interdisciplinary research group created by Dr. Dorothybelle Poli, Dr. Lisa Stoneman and a collection of undergraduate students in 2013. The DRC was created to research the link between ancient *Lepidodendron* plants and the lore of dragons (see <https://dragonrc.net/about-2/>). *Lepidodendron* is “a common Carboniferous Period plant fossil, [that] stood 100 feet tall and was approximately 8–12 feet wide” (Poli and Stoneman, 2017).



Fig 1. Examples of *Lepidodendron* plant fossils that led to the beginning of the search for the origin of dragons (Gallery of the DRC).

This question came from the fact that ancient *Lepidodendron* plants have visual features that can be interpreted as scale and chainmail patterns (Fig1) that are often found in different dragon lore and imagery (Poli and Stoneman, 2017). There were scale patterns found within the *Lepidodendron* plant fossils that were the result of leaves falling off throughout the plant's growth (Fig 1). The plants had roots that were five-pronged structures which sit partially exposed above ground, with the trunk still attached it resembles a massive leg (Fig 2). Branch scars, left behind when the plant is damaged, tend to resemble a reptile's eye, complete with eyelid (Poli and Stoneman, 2017). In the words of Drs. Poli and Stoneman, "coal seams worldwide contain Carboniferous plant fossils which have the appearance of scaly reptile skin, legs, feet, and eyes" (2019). The question asked by the DRC is, is it "plausible that a plant fossil occurring worldwide, covered in beautiful scale patterns, may be an inspiration for dragons?" (Poli and Stoneman, 2017).



Fig 2. Photo of the root structure and trunk base of a *Lepidodendron* fossil, which could be mistaken as a large foot and beginnings of a leg by an uninformed observer (Photograph Gallery of the DRC, taken at Kellingrove Museum, Glasgow, Scotland).

There were early questions about whether dinosaur fossils could also have led to dragon lore; however fossilized dinosaur skeletons do not come with instructions about how the bones should go together or what the outside of the animal looks like, so it is unlikely that people would assume the dragon's appearance from them (Poli and Stoneman, 2017). Another explored basis for dragon stories was large reptiles such as snake or monitor lizards, but this idea was mostly unfounded because in the areas of saturated dragon lore, the needed reptiles were not present. So, the DRC began examining the connection between ancient *Lepidodendron* plants and the folklore of dragons. The Collaborative collected large amounts of *Lepidodendron* fossils from around the world and folklore data in the form of stories, in hopes that the locations of fossil discoveries and story starting places might correspond to each other. It was found

that there is a connection among the discovery of Carboniferous-era plant fossil locations and the locations of dragon lore that is significant enough to say that the *Lepidodendron* fossils may have led to the creation of dragon or beast lore (Poli and Stoneman, 2017).

The history of the DRC and its interdisciplinary research focus had me thinking about the different projects I might enjoy undertaking even though they would not fit into my planned major (at the time) of Biology with a pre-veterinary medicine path. I wanted a project outside of biology because I wanted my education at Roanoke College to be well rounded and interdisciplinary. Before entering college, I had heard horror stories about college students being so focused on their majors and minors that they had little knowledge or experience with subjects not a part of their discipline. I knew that I would get lab and research experiences within my major with my classes, but I wanted a widespread and complete education at Roanoke College.

The question became what would my project be for the DRC? After all, I was going to give up my limited free time to perform this research, and I wanted it to be interesting enough that it held my attention through all the new information I was also gaining from my classes. My first wish was something to do with reading, which I love; if the topic is right, I can read massive amounts of information in little time. Thinking of the DRC's research base of dragons and my love of books, I wanted to work with dragon lore; however, that is a massive subject that had been traveled heavily by the DRC. So, talking with Dr. Poli was the next step to see what places in dragon lore were not already researched heavily or where there was a hole in the knowledge base of the group.

Finally, I came up with the idea of collecting dragon descriptions because there were not any data collected and housed in one place about the different descriptions of dragons from around the world. This subject would be interesting because there are hundreds (if not thousands) of different dragons spoken of in the stories, and even though some have the same name, the descriptions could vary over time or place.

### **Collecting Dragon Descriptions**

After deciding to collect dragon descriptions to form a searchable a list, one must decide where the descriptions come from and what information should be collected from each source. I considered three different sources of information that could possibly be used for this project: internet search engines, books of different genres, and academic articles. There are positive attributes and negative attributes that must be taken into consideration when choosing the main method of finding dragon descriptions.

Using internet search engines such as Google or Firefox produces almost endless collections of dragon information and descriptions. The search engines would bring forth too much information that may change every time the search is done. Also, for one search of “dragon” on Google there are 1,550,000,000 results; that is way too many results to sort through, organize and choose from. For all that information collected in one place, there is no way of knowing which sources will have dragon descriptions or where the information came from. Looking at the first Google search for “dragons,” I had a Wikipedia hit, a speech recognition program, a Google map (with stores and restaurants), YouTube videos, and one possibly usable website on which to find a dragon description. So, the open internet was an unreasonable, unreliable, and over ambitious source for the dragon descriptions because I did not have the time to go

through the search results and most methods of refining the search could have caused the loss of dragon descriptions.

The next possible source was books because there are many different genres that would have dragons within them, and among them, many different descriptions for those dragons. There are children's books such as *Dragonology: Tracking and Taming Dragons*, *The Frost Dragon* by Ernst Drake that would be useful to examine the dragon descriptions because these books give a view into the dragons that a child may imagine. Books of myths like *Myths & Legends: Classical Greek, Celtic, Norse, Chinese, African, Native American & More* by Jake Jackson give a view into the different dragon descriptions found within cultures around the world. And academic books like *Scottish Myths: Notes on Scottish History and Tradition* by Robert Craig Maclagan showed how dragon lore is being studied and the changes in dragon descriptions over time. With the wide range of book genres, I could see the different descriptions of dragons around the world and throughout history, without being overwhelmed with information. I could have access to the Roanoke College library resources, the DRC's library, and my personal library. Also, anyone can find massive amounts of information on the internet quickly, but getting large amounts of information from books is time consuming because there is the need to read the whole book to see if the information is within it. So, working with books would allow me to collect information that may not be accessible on the internet or well known, and help cut down on the research time of others who may wish to find dragons within books.

Finally, scholarly journal articles that may have dragon descriptions with were used. However, there is a small number of articles with dragon descriptions because

the word “dragon” is often used to show emphasis to a metaphorical problem being faced or in reference to Chinese history. Much of the research about dragons is on their place within mythology and history, and these works are often books. Another problem with journal articles was that each had their own voice and language for each discipline. For instance, an ecologist may have trouble with the wording of an art history journal even if they are reading about research done within the same park.

So, using books as an information source for my collection of dragon sources was best because of the accessibility and diversity of subject types that may have dragons in them. This allowed for a more complete sample of dragon descriptions because I read a wide range of books (from children’s to academic) to find dragon descriptions and found many creatures with similar characteristics to dragons but with different names. Hopefully, the diverse sources of descriptions will allow others to find patterns within dragon descriptions that could lead to understanding of how the stories started and on what the beasts were being based, i.e., a snake, lizard, or other animal.

The next step was to decide what information should be collected other than the dragon’s description, because with each description there was different information such as the dragon’s name, country of origin, how it was found, etc. Not all the sources had how the dragon description or where the story was found or the country of origin. The way the dragon lore started was not explained in every book, so this information was not added to the data collected about dragon descriptions. The country of origin was added to the data collected about the dragons described because country of origin could be important to future researchers and artists looking at dragons that come from a specific country or area of the world. Another piece of information collected from each

dragon description was the name of the dragon if the source gave it because the name of the dragons can allow for dragons with the same name to be cross examined and dragons with different names from the same area to be compared. So, each entry has a dragon description, a dragon name, and a country of origin if they were within the source material. However, just this data would not allow other researchers to follow my footsteps to the sources of the dragon descriptions. Thus, the reference for the source and the page number where the information came from was added to the list.

Dragon Name	Book	Pages	Description	Country
Bunyips	A Field Guide to Fantastical Beasts: An Atlas of Fabulous Creatures, Enchanted Beings, and Magical Monsters	Pg. 78-79	Accounts of its appearance vary greatly but common features include dark fur, flippers, and the head of a dog or an emu, with either sharp teeth or tusks. A fanged monster, "partly animal, partly bird"	Australia
Chinese Dragon	A Field Guide to Fantastical Beasts: An Atlas of Fabulous Creatures, Enchanted Beings, and Magical Monsters	Pg. 105	They too walk on four clawed feet and have a scaly, snake-like body, but they also have horns and tend not to have wings	China
Dragon	A Field Guide to Fantastical Beasts: An Atlas of Fabulous Creatures, Enchanted Beings, and Magical Monsters	Pg. 102	With their huge size, scaly green skin, leather wings, razor-sharp teeth, barbed tail, and claws- not to mention the ability to breathe fire The dragon's lizard- like body and crocodile scales hark back to this watery origin	
Echidna	A Field Guide to Fantastical Beasts: An Atlas of Fabulous Creatures, Enchanted Beings, and Magical Monsters	Pg.80	Half-woman and half-snake	Greece
Hydra	A Field Guide to Fantastical Beasts: An Atlas of Fabulous Creatures, Enchanted Beings, and Magical Monsters	Pg. 102	Multi-headed serpent	Greece

Fig 3. An example of the dragon description data collected from different book sources with the dragon's name, book title, page the source was found on, dragon description, and country.

Hopefully, the list of dragon descriptions I created will be useful to other researchers and artists. Researchers can use the list to search for similarities among dragon descriptions, potentially allowing them to see how stories may have moved around the world because the description is often tied to the country of origin, and the ability to see patterns in the descriptions can emerge. For artists, the matrix may be



useful because there are so many different choices of dragon descriptions to be used as a potential basis for one of their projects (such as the one an artist has built a dragon sculpture for a DRC exhibit and may plan to make another) and having access to not only the description of the dragon but also the tentative location of the dragon may lead to a large scale, connected project.

### **Why Make the Dragonbase?**

The idea of creating a database of the DRC came to me as I was placing my research on the DRC Google Drive and saw that there were over 40 folders, each created by Dr. Poli, Dr. Stoneman, or students. Each folder had the possibility of holding massive amounts of collected data from the other dragons (people in the DRC). While looking at the different information held in the DRC Google Drive, I was also thinking of my distinction project and hoping to find a project idea within the many folders. I saw that there was everything from research data collected by students, to Dragonfest planning ideas, to class plans waiting to be lost among the files and documents and I thought maybe I could help connect and organize some of this data in one place for later researchers to use to find data and patterns. After all, future researchers with the DRC cannot add to the current knowledge of the DRC without being able to see what the current knowledge is and what holes are in the knowledge that need to be fixed.

The next step was to discuss the idea of a searchable database with Dr. Poli and Dr. Stoneman because if the database wound up not being of use to the DRC, then there was no reason to create one. Spending many hours of work on a project that would not help anyone in the DRC or elsewhere would not logically work for my honor's distinction project, and I would have to work hard to find an interesting project to work

on and finish to graduate as a part of the Roanoke College Honor's Program. After thorough discussion about the parts of my project and how they might be done, we decided that getting much of the DRC data in one place would be helpful to the group and may work as a distinction project for the honors department if it was large enough. After all, even Dr. Poli and Dr. Stoneman have trouble navigating the Google Drive at times, I had seen them try during DRC meeting when they wanted to show the dragons something. And if searching the Google Drive is difficult for the Professors, then it will be even harder for students which may harm the research efforts of students looking to past research for inspiration or to continue a pervious project.

### **Making of the Dragonbase**

After the project was decided upon in theory, making it a fact was the next step because I am a biology and environmental studies student that has no coding skills though I do have skills in Excel, Word, PowerPoint, and other Microsoft products. Sadly, these programs die not help much with creating a functional database filled with research materials. One way of removing this knowledge obstacle was to have a committee member that works in Information Technology (IT) that could help with the process of creating and implementing a database. Another way of helping close the information gap I was experiencing was to take a Roanoke class on a coding language. The class was on the coding language Python, which was not the language of databasing, however learning it would give me a taste of coding and an insight into the different problems in coding.

To make the Dragonbase, I had to collect all the data into one place and in one format that would allow for a searchable database later on. With the help of my

committee member, Scotty Smith, it was decided that the data would be collected and formatted in the program MySQL Database Service which is an open-sourced software. MySQL was chosen for this project because the program was easy for a coding novice to use and still powerful enough to run a large-scale database for a highly branched research group like the DRC. MySQL Database Service is a fully managed database service to deploy cloud-native applications using SQL (Structured Query Language) to add, access, and process data stored in a computer database. MySQL works with relational databases that store data in many separate tables instead of one large storage area on a computer (MySQL, 2021). MySQL allows for the programmer to set up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required, or optional, and “pointers” between different tables (MySQL, 2021).

After the program for collecting data for the database was chosen, there was the task of choosing what data from the DRC Google Drive would work to fill the MySQL schema for the Dragonbase. The MySQL schema is the base setup for the tables and organization of the database, and Scotty Smith created this schema for this project. After the MySQL program was setup, I began to learn how to fill the different tables with the needed information and how to create more tables as needed. The creating of the tables was simple, however choosing what table to use was the harder part. The purpose of MySQL database is to remove redundancy that would cause problems within the database. This redundancy was removed by making a table to hold information that would be found in multiple tables (like city or country) and then connecting this table to

the others with coding. But this is a later problem I will speak of after I fill in the schema as much as possible.

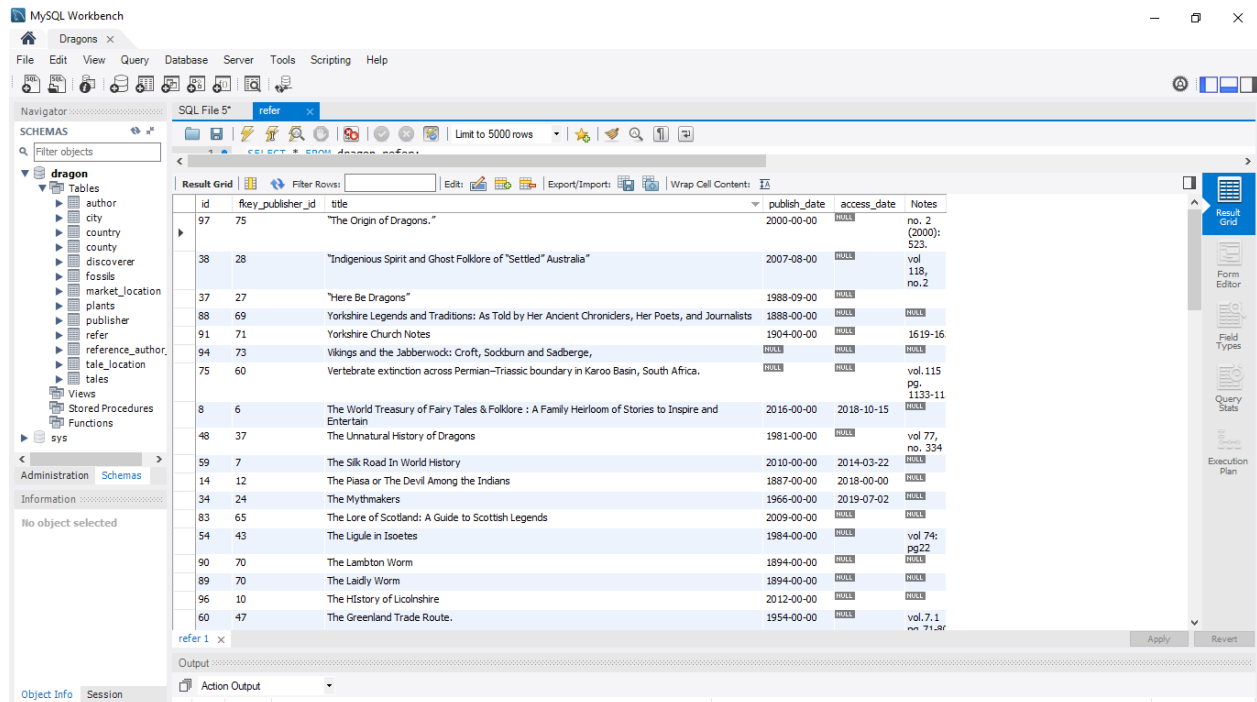


Fig 4. An example of the formatting used to fill the Dragonbase within the MySQL program. In this case, the reference table has key connects to a publisher table and this table will later be connected to a reference and author table.

The first table to be filled was the dragon descriptions that I spent so much time collecting. However, there was the choice of what information should be placed in another table to remove redundancy. One part that was separated from the descriptions table and given a reference key was the country of origin because countries were going to be connected to many different tables (cities table, publisher table, etc.). Another piece of information that was connected to the dragon description from another table was the book reference for each description because references may be used in multiple tables, but the page numbers were placed in the dragon description table (fig.4). The only information that was directly placed in the dragon description table was the dragon descriptions, the dragon names, and the page numbers.

These were the steps taken while filling the different tables that would make up the Dragonbase. There had to be a reference table to put the references from mine and other dragons' research (fig.4). With the reference table, there also had to be a table for authors, publishers, and a table to connect authors and references. The table for connecting authors and references was created to become an easier way of later coding multiple authors to a reference. Next there was a Cities table that was later connected to the Countries table. The data from the DRC fossil research was also added to the Dragonbase with the discoveries' coordinates and data founded, and with it tables for fossils' discoverers and fossil species and connection to the City and Country tables. Research about the origin location of dragon tales was also added to the Dragonbase with the coordinates of the tale being added along with connections to References, Cities, and Countries tables. The final piece of data added was about the locations of markets found within the United Kingdom throughout history. These markets were added with the date of inceptions, county (another table), and location name.

After the data was added to the tables within the MySQL workbench, the different tables were coded to connect the data from one table to another. First, the "Select" command is used to pull which columns one wants into the table being formed (Fig5). The format for the columns being pulled in are database. table. column, a real coding example is dragon. author.author\_first\_name (Fig 5). Each column name is followed with a "," to separate the commands. The order of the different columns within the "Select" command is the order of the columns within the results table. The "Select"

command is finished with a “From” command which designates to which base table the columns will be added (Fig5).

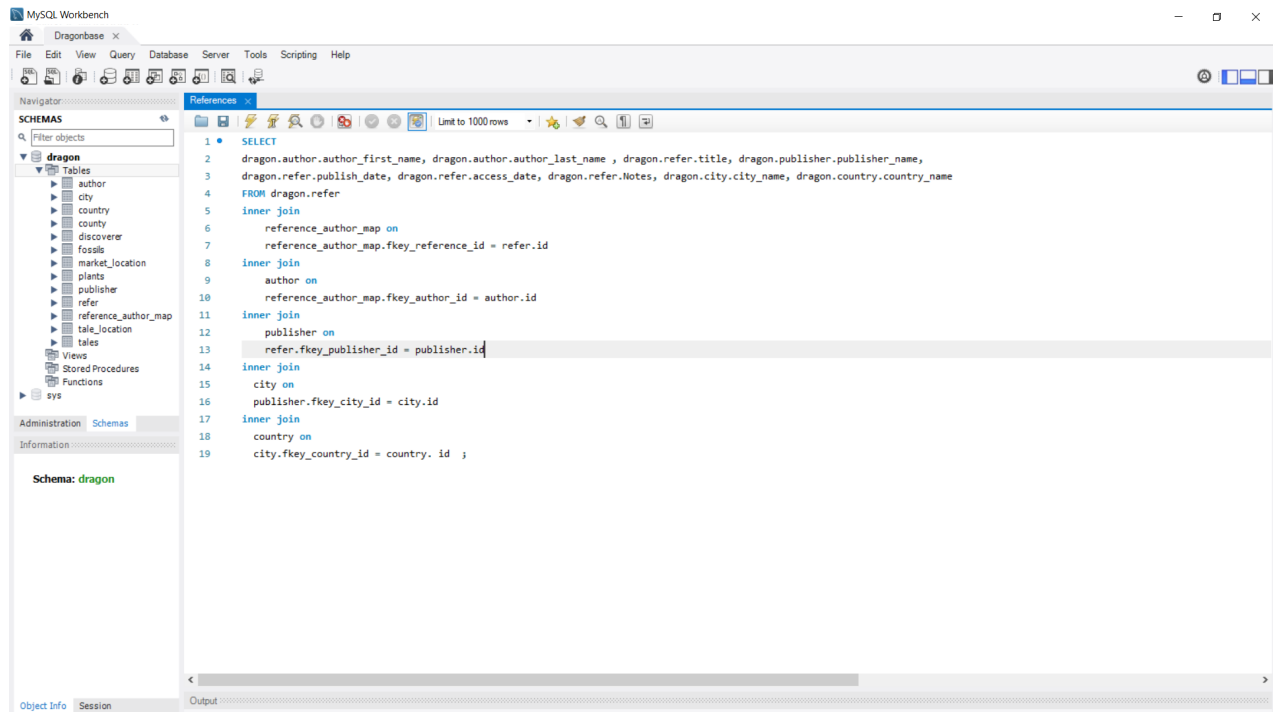


Fig.5. An example the SQL coding used to connect different tables together to form a complete showing of the data within the Reference table.

After all the columns are chosen for the table display, joins must be made to fill in data within the table. The command “Inner Join” is used to start connecting different tables to each other. In the next row from the “Inner Join” command, the name of the table that needs to be connected to the base table is added with the word “on” which should turn blue to show that it is working (Fig 5). After the joined table is turned on, the data one wants to move from one table to another must be connected. This works by inputting the name of the column being filled with the outside table’s data in the format of table. column, real world example, refer. fkey\_publisher\_id (Fig 5). Then one must add an “=” followed by the table column that would be filling data. In the case of the refer. fkey\_publisher\_id = publisher.id (Fig 5). This process should be repeated for each

fkey (foreign key) to allow for the data to be transferred. After all the connects are made the code is finished with a “;” which stops the program being read further (Fig 5). After finishing writing the program it should be run by pushing the yellow lightning bolt which forms the full table (Fig 6).

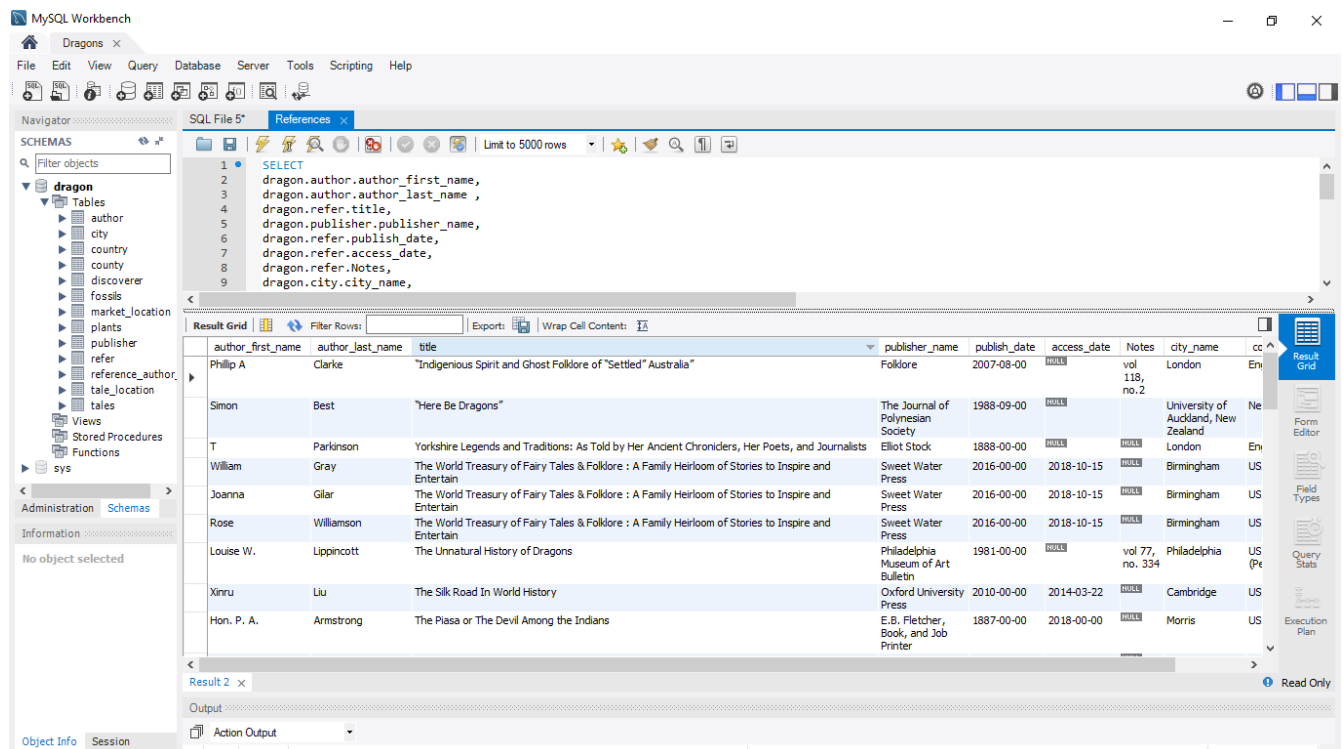


Fig.6 An Example of a table after running a SQL code to join the different tables and fill in the data indicated by the fkey.

## Finishing the Dragonbase (For Now!)

After finishing coding of the Dragonbase within MySQL, the Dragonbase must be put on the internet in a searchable format for the DRC and others. With the help of Scotty, it was decided that the Algolia, search-as-a-service platform, was a good platform to work with. Algolia has a free service that allows access to most of the search set-up feature, however with limited units of search allowed per month. One unit is

1,000 search requests and a maximum of 1,000 records (What, 2021). For the free plan, there are 10 units given each month, and access to: Search API, Search Analytics, A/B Testing, Synonyms, Visual Editor and, Rules (Merchandising and Intent detection). The Standard plan, which is a paid plan, has the same features as the free plan but after the first 10 units are used, one pays a dollar per unit. This will most likely end up being the payment plan for the Dragonbase as it is used more by the DRC and other people.

There are many tools given to the users of Algolia that allow for fast and powerful searches of data. First, the Search APIs (application programming interface) are the software components that seamlessly introduce search abilities to a website or application (Perrot, 2020). The APIs provide back-end tools that index documents, can query for different types of data, manage cluster configurations, and view search analytics (Perrot, 2020). These tools allow for easy use by a developer wanting to set up a search bar for a website with large amounts of data. The next tool provided by Algolia is the Search Analytics. The analytics tool finds the most popular queries (searches) and what queries have few to no results (2014). These will give trends about what people want to see or where there should be more information. The analytics can also provide trends of queries over time, and what categories are being searched (2014). These analytics may be useful by a student researcher of the DRC if they want to see how the Dragonbase is being used.

A/B Testing allows for a developer to test the relevance of their search set ups and to see if different ranking of data allow for a more effective search experience for users (Resources). The developer creates two indexes with the same data but different



ranking of importance for how the data is viewed before starting the A/B testing which will split search queries equally between A and B and allows for developers to see which ranking works best (Resources). Another tool is Synonyms, which examines the search and refinements of users to find synonyms (pants=trouser=slacks) that can make searches more accurate for the user. This tool can cut down on the research developer's need to do on language and common terms for similar ideas because the searcher of users does it for them. These tools given by Algolia for free are one of the reasons Algolia was chosen to make the Dragonbase online and searchable. The other reason Algolia was chosen is that the construction of the search indices did not take great knowledge of coding or computers, so it was easy for a novice like myself to create a searchable program.

The dashboard for using Algolia is very user friendly which was good for this project because I did not have much time to learn how to use Algolia (Fig 7), as well as only limited help from Scotty because of scheduling and separation caused by Roanoke College students returning home for public safety reasons (Covid-19). The program had all the different tools listed on the main page for users to see and use as needed, and they were in the order of use for a developer to create a search index and test it (Fig 7). I did not use most of the tools other than Indices because I was only working to create a searchable index that could be used by others. The rest of the tools were for making the search experience better for users.

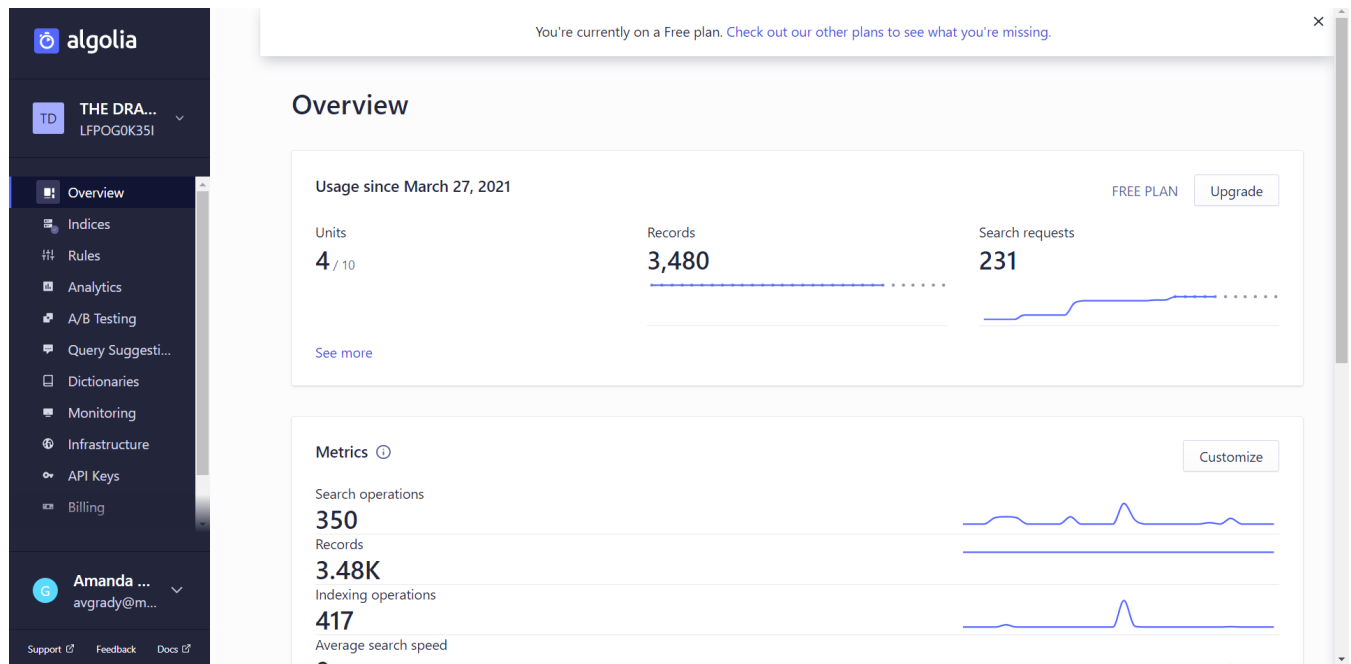


Fig 7. The opening page of the Algolia dashboard for creating a searchable program. It contains easy to understand data about the searches being done on the indices.

The first step to making the searchable Dragonbase, was to create the indices for the data one wants to search. To make the index, the data had to be copied from MySQL in a format that would be compatible with Algolia indices program. The easiest way of copying the data was to have MySQL make a .CVS file for the table that was made within MySQL. The .CVS stands for comma-separated values file and could be opened and edited within Window's Excel program, which was useful for making small changes to things like attribute titles that would make the data clearer within the data search. After the data was in a compatible file, it could easily be dragged and dropped into the indices program (Fig 8). After the file was added the data was displayed in a list of entries with each having all the attributes that were with the data (Fig 9). The indices created for the Dragonbase were Dragon Descriptions, References, Fossils, Tale Locations and Market Locations.

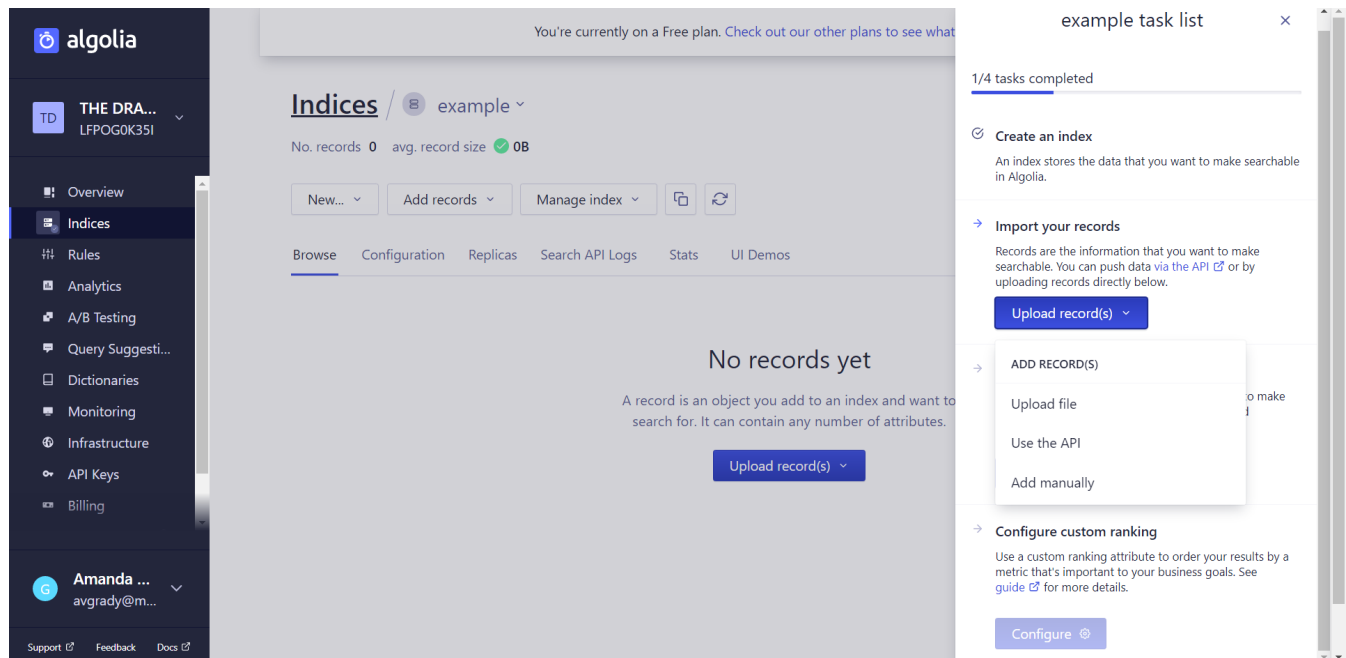


Fig. 8. An example of creating an index. It was very easy to unload the Dragonbase files after they were placed into the correct file type (.CVS)

After the entries are created, they must be configured for searchability of the attributes and how the results will be ranked as they are found (Fig 8). The configuration of the attributes determines which attributes would be visible when the index is being searched. For example, if the attribute “Title” was not marked as searchable within the search configuration when a search of the Dragon Description index happened, the attribute “Title” would not appear at all (Fig 9). So, each attribute needs to be turned on within the searchability, and then one must choose if the attribute will be ordered or unordered. When attributes are marked as unordered then they all have the same importance within the searchability, so when you add ordered attributes, they are searched through first for the entered value before the search looks at the other attributes. For the Dragon Description index, the “Dragon Name” attribute is ordered and first within the list of searchable attributes making it the first value searched.

1	objectID	"7565786000"	
	Dragon Name	"Piasa"	
	Title	"The Piasa or The Devil Among the Indians"	
	Author's First Name	"Hon. P. A."	
	Author's Last Name	"Armstrong "	
	publish_date	"1887-00-00"	
	access_date	"2018-00-00"	
	publisher_name	"E.B. Fletcher, Book, and Job Printer "	
	city_name	"Morris "	
	Page_Number	18	
	Dragon_Description	"Why he did not mention the fact of their having the wings of a bat, but of the shape of an eagle's (18)\ They also had four legs each supplied with eagle-shaped talons\ "	
	Country	"USA (Illinois )"	

Fig 9. An entry created by Algolia with the data given to the indices program about my Dragon Description research.

After all the indices were given their base searchable attributes and configuration it was time to create the search programs that would run the Algolia search API. The programs would form the search bar and call the results forward into the screen. With the premade coding from Algolia and Scotty's help, I was able to edit the code in Notepad so that when run within a browser, it formed a working search bar. The coding needed to run the searches was a mix of JavaScript and HTML languages, neither of which I know how to work and change for my needs. However, the changes needed were easy to do after learning what needed to be done to get the wanted search bar. After all the code was pulled from the Algolia website, the first change needed was to fill in the needed keys to connect to my Algolia account and indices.

Without these keys, the program will not connect to Algolia or be able to pull the results of the search to the page being used to search.

After the keys were placed within the coding, the next step was to choose the indices that will be searched with the input. Sadly, the coding needed to have all the indices searchable at one time within one search bar is a long and complicated multiple language undertaking that neither I, nor Scotty had time to learn. So, there will be a search bar for each index that will hopefully be on the same website. When coding in the index, one must make sure that the spelling and format is the same as the index name; if the format is different, then the search bar will not connect and work. After the index is chosen, the next step is to choose the first attribute to be listed and the other attributes to be shown.

Using the Dragon Description index as an example, the first attribute coded was Dragon Name with the code” `<article><strong> {{#helpers.highlight}} { "attribute": "Dragon Name", "highlightedTagName": "mark" } {{/helpers.highlight}} </strong>`” it is numbered and bolded (Fig 9) (Fig 10). The Dragon Name was chosen as the first displayed attribute because the name of the dragon is often the greatest distinguisher of the different types of dragon as well as a short way of identifying the dragon. The other attribute would either be too long (dragon description) or too general (country of origin) to be the distinguisher of the dragon type. After the first attribute was chosen, one must decide what other attributes are wanted for the search and in what order they will be displayed.

The Dragon Description index in Algolia had 12 different attributes and the search I created has seven attributes (Fig 9) (Fig 10). The attributes I left out either did

not add to the search (objectID) or were not needed to impart greater understanding of the search results like data accessed (Fig 9). The code “<p>{{#helpers.highlight}}{  
 "attribute": "Dragon\_Description", "highlightedTagName": "mark"} {{/helpers.highlight}}  
 </p>” was used to add in an attribute with the wanted attribute in between quotation  
 after “attribute.” To add a bolded title to the code <strong>Dragon Description:</strong>  
 was placed in front of the attribute coding but after the <p>. This process was repeated  
 for each attribute, and to change the order, one just has to move the full line of attribute  
 code to the new order. So, if I wanted “Page #” before “Author First Name”, I would  
 move the attribute code for “Page #” to the line above the “Author First Name” code,  
 which would change the order of the attributes in the search results (Fig 10). After all  
 the coding was done on the Notepad page, it had to be saved with the ending “.html”  
 because this turns the page and code into an executable file that will open within a  
 browser. Without the “.html” ending on the file name, it will open within Notepad and can  
 be edited for later use.

Worm

#### 1. **Worm**

**Dragon Description:** The creature itself is a huge serpent ('Worm') with wings, but no legs are mentioned; when angered by the theft of one of its treasures it flies far and wide, spewing fire onto power of flight. Its weapons are its hot breath and its sharp teeth(pg.33). its bite had been venomous (pg.33)

**Book Title:** British Dragons

**Author First Name:** Jacqueline

**Last Name:** Simpson

**Page #:** 33

**Country:** England

#### 2. **Worm or Lindwrom**

**Dragon Description:** Serpentine shape but lacks wings or legs

**Book Title:** A little History of Dragons

**Author First Name:** Joyce

**Last Name:** Hargreaves

**Page #:** 28

**Country:** North Europe

Fig 10. An example of the search bar and results for the Dragon Description Index.

After coding for all the search bars was created, I asked Roanoke College's IT Department to make a WordPress website that would be connected to the college and had myself placed as the administrator. I chose to have the IT department create the website because it would give greater protection for the website from the mistakes of an amateur building a website and allow for greater ease of transferring control to the next person working on the Dragonbase. Also, if there are any great or sudden changes to WordPress, hopefully having the website hosted by the school means it will not have negative consequences for the Dragonbase website.

After the website is made, the indices search bars must be added so that anyone can search through the indices. WordPress does not like outside code being added to the base website template because if the coding has mistakes within it, the code can crash the website. So, WordPress protects itself by using plugins to make changes to how the website is used and run. Plugins are outside coding tools that allow website developers to add features and tools to their website without the risk of amateur coders crashing their website with a mistake. To add the search bars, Scotty helps me find and use the plugin, Head and Footer Scripts Inserter, that would allow me to add my coded search bar to the website. The code was placed in the Footer entry areas with the code for connecting to Algolia placed in the box that will be printed at the beginning of the Footer section, and the code for pulling results for a certain index being put in the box will be printed at the end of the Footer section. Finally, the code that creates the search box and the list of search results is placed within a new page for the website, making the search bar within the webpage and allowing the search results to be seen.

## **Hopes for the Future.**

With the search bar being added to the WordPress website, my part of creating the searchable database for the DRC is done. I have created the basis for the database that can be added to by people in the future and created the Algolia profile needed to make the database searchable and online. However, there are many other things that can be added to the database and the website in the future. There is a massive amount of data left within the DRC's Google Drive that could be added to the Dragonbase, like reference data from the paper and research done by other dragons within the DRC.

I hope that the next person working on the Dragonbase can figure out how to add all the indices to the Dragonbase website and maybe learn the coding languages needed to make one large search bar that that will search all the indices at once. If the next person that takes up the Dragonbase project wants to make one large search bar they will need to have at least a basic understanding of the coding languages: PHP, HTML, and JavaScript. This was an undertaking that came up too late in my project for me to do so considering I learned about the coding process needed to make the search bars during my last semester at Roanoke College.

To help the future workers of the Dragonbase, I have collected all the websites that I used to make the Dragonbase and placed all of them in one document with their login information. I have also done a data dump on MySQL which will help the next worker to continue adding data to the Dragonbase using MySQL without needing to start from the beginning. There are some basic directions to go with the data dump which should help them open the file. Also, all the indices search bar coding documents have been placed within my file on the DRC Google Drive along with the .csv files for



the current indices in Aligolia. The final step of helping future Dragonbase workers was to collect other documents from the DRC Google Drive and place them in a folder for easy finding and use. This file does not hold all the documents that could be placed in the Dragonbase and the workers should search the Google Drive for more usable data. I hope that the Dragonbase will continue to grow and be of use to the DRC and many others.

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