S2 Appendix. Pokémon key example

```
"$schema":
"https://raw.githubusercontent.com/WouterKoch/Clavis/main/Schema/Clavis.
 "title": "A key to a selection of Pokémon",
 "language": "en",
 "license": "https://creativecommons.org/licenses/by/4.0/",
 "creator": "person:wouterkoch",
 "lastModified": "2022-03-19 21:35:25",
 "identifier": "26b57071-15ca-4b44-92a4-b61181f15373",
 "persons": [
   {
     "id": "person:wouterkoch",
      "name": "Wouter Koch"
   }
 ],
 "organizations": [
     "id": "organization:ntnu",
     "name": "Norwegian University of Science and Technology",
      "url": "https://www.ntnu.no"
   }
 ],
 "taxa": [
      "id": "taxon:pikachuidae",
      "scientificName": "Pikachuidae",
      "children": [
          "id": "taxon:pokemon_172",
          "scientificName": "Pichu",
          "children": [
              "id": "taxon:pokemon_172_standard",
              "label": ""
            },
              "id": "taxon:pokemon_172_shiny",
              "label": "Shiny"
        },
          "id": "taxon:pokemon_025",
          "scientificName": "Pikachu",
          "externalReference": [
```

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```
"serviceId": "service:wikidata",
          "externalId": "Q9351"
        },
          "serviceId": "service:example_api",
          "externalId": "Pikachu"
        }
      "followUp": "https://example.com/pikachu_costumes",
      "children": [
        {
          "id": "taxon:pokemon_025_standard",
          "isEndPoint": true,
          "label": "",
          "children": [
              "id": "taxon:pokemon_025_standard_male",
              "label": "ơ"
            },
              "id": "taxon:pokemon_025_standard_female",
              "label": "Q"
          ]
        },
          "id": "taxon:pokemon_025_shiny",
          "label": "Shiny"
      ]
    },
      "id": "taxon:pokemon_026",
      "scientificName": "Raichu",
      "children": [
          "id": "taxon:pokemon_026_standard",
          "label": ""
        },
          "id": "taxon:pokemon_026_shiny",
          "label": "Shiny"
        }
      ]
    }
  ]
},
{
  "id": "taxon:pokemon_115",
  "scientificName": "Kangaskhan",
  "geography": {
```

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```
"polygon": [
      Γ
            130.0341796875,
            -10.228437266155943
          ],
          111.97265625,
            -21.779905342529634
          ],
          Ε
            115.09277343749999,
            -36.91476428895593
          ],
            131.2646484375,
            -32.916485347314385
          ],
            141.8994140625,
            -40.44694705960048
          ],
          Γ
            150.82031249999997,
            -38.8225909761771
          ],
            154.95117187499997,
            -26.15543796871355
          ],
            142.3388671875,
            -10.09867012060338
          ],
          Ε
            138.69140625,
            -12.382928338487396
          ],
          [
            130.0341796875,
            -10.228437266155943
        ]
      ]
    ]
},
{
  "id": "taxon:castform",
  "scientificName": "Castform"
}
```

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```
],
                                                                                    151
"characters": [
                                                                                    152
  {
                                                                                    153
    "id": "character:type_of_pokemon",
                                                                                    154
    "title": "Pokémon type",
                                                                                    155
    "states": [
                                                                                    156
                                                                                    157
         "id": "state:pokemon_type_electric",
         "title": "Electric"
                                                                                    159
                                                                                    160
    ]
                                                                                    161
  },
                                                                                    163
    "id": "character:color",
                                                                                    164
    "title": "Color of body",
                                                                                    165
    "states": [
                                                                                    166
      {
                                                                                    167
         "id": "state:color_blue",
                                                                                    168
         "title": "Blue"
      },
                                                                                    170
                                                                                    171
         "id": "state:color_red",
                                                                                    172
         "title": "Red"
                                                                                    174
    ]
  },
                                                                                    176
                                                                                    177
    "id": "character:all_colors",
                                                                                    178
    "title": "Colors on body of the Pokémon",
                                                                                    179
    "type": "non-exclusive",
                                                                                    180
    "states": [
                                                                                    181
      {
                                                                                    182
         "id": "state:colors_yellow",
                                                                                    183
         "title": "Yellow"
                                                                                    184
      },
                                                                                    185
                                                                                    186
         "id": "state:colors_red",
                                                                                    187
         "title": "Red"
      },
                                                                                    189
         "id": "state:colors_black",
                                                                                    191
         "title": "Black"
      },
                                                                                    193
                                                                                    194
         "id": "state:colors_brown",
                                                                                    195
         "title": "Brown"
      },
                                                                                    197
         "id": "state:colors_white",
                                                                                    199
         "title": "White"
                                                                                    200
      }
                                                                                    201
    ]
```

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```
},
                                                                                 203
                                                                                 204
  "id": "character:tail_shape",
                                                                                 205
  "title": "Shape of the tail end",
                                                                                 206
  "states": [
                                                                                 207
    {
                                                                                 208
       "id": "state:pointy_tail",
                                                                                 209
       "title": "Pointy",
       "media": "media:pointy_tail"
                                                                                 211
    },
                                                                                 212
                                                                                 213
       "id": "state:lobed_tail",
       "title": "Double-lobed",
                                                                                 215
       "media": "media:lobed_tail"
                                                                                 216
                                                                                 217
  ]
                                                                                 218
},
                                                                                 219
{
                                                                                 220
  "id": "character:wearing_hat",
                                                                                 221
  "title": "Is the Pokémon wearing a hat?",
                                                                                 222
  "states": [
                                                                                 223
    {
                                                                                 224
       "id": "state:hat",
       "title": "Yes"
                                                                                 226
    },
                                                                                 228
       "id": "state:no_hat",
       "title": "No"
                                                                                 230
    }
  ٦
                                                                                 232
},
                                                                                 234
  "id": "character:hat_shape",
                                                                                 235
  "title": "What is the style of the hat?",
                                                                                 236
  "logicalPremise": "state:hat",
                                                                                 237
  "states": [
                                                                                 238
                                                                                 239
       "id": "state:bowler_hat",
                                                                                 240
       "title": "Bowler hat"
                                                                                 241
    },
                                                                                 242
                                                                                 243
       "id": "state:top_hat",
       "title": "Top hat"
                                                                                 245
    }
                                                                                 246
  ]
                                                                                 247
},
                                                                                 249
  "id": "character:weight",
  "title": "How much does the Pokémon weigh?",
                                                                                 251
  "userRequirement": "requirement:catch",
  "type": "numerical",
                                                                                 253
  "states": {
```

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```
"id": "state:weight",
      "min": 1,
      "max": 125,
      "stepSize": 1,
      "unit": "kg"
    }
 }
],
"statements": [
 {
    "id": "statement:pikachu_is_electric",
    "taxon": "taxon:pokemon_025",
    "character": "character:type_of_pokemon",
    "value": "state:pokemon_type_electric",
    "frequency": 1
 },
  {
    "id": "statement:pikachu_is_never_blue",
    "taxon": "taxon:pokemon_025",
    "character": "character:color",
    "value": "state:color_blue",
    "frequency": 0
 },
  {
    "id": "statement:pikachu_lobed_tail",
    "taxon": "taxon:pokemon_025",
    "character": "character:tail_shape",
    "value": "state:lobed_tail",
    "frequency": 0.5
 },
  {
    "id": "statement:pikachu_pointy_tail",
    "taxon": "taxon:pokemon_025",
    "character": "character:tail_shape",
    "value": "state:pointy_tail",
    "frequency": 0.5
 },
  {
    "id": "statement:pikachu_weight",
    "taxon": "taxon:pokemon_025",
    "character": "character:weight",
    "value": [
      2.98,
      10.1
    ],
    "frequency": 1
 },
  {
    "id": "statement:castform_rain_type",
    "taxon": "taxon:castform",
    "character": "character:castform_type",
    "value": "state:rainy_castform",
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```
"frequency": 0.2
},
{
  "id": "statement:castform_rain_type_bergen",
  "taxon": "taxon:castform",
  "character": "character:castform_type",
  "value": "state:rainy_castform",
  "frequency": 0.9,
  "geography": {
    "polygon": [
      5.27618408203125,
            60.44976847885747
          ],
          Γ
            5.218505859375,
            60.4233434866285
          ],
            5.27618408203125,
            60.36160157353732
          ],
            5.395660400390625,
            60.36839212633114
          ],
          5.4052734375.
            60.421309904895715
          ],
          5.27618408203125,
            60.44976847885747
          1
        ]
      ]
    ]
  }
},
{
  "id": "statement:pikachu_contains_yellow",
  "taxon": "taxon:pokemon_025",
  "character": "character:all_colors",
  "value": "state:colors_yellow",
  "frequency": 1
},
{
  "id": "statement:pikachu_contains_black",
  "taxon": "taxon:pokemon_025",
  "character": "character:all_colors",
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```
"value": "state:colors_black",
                                                                             359
  "frequency": 1
                                                                             360
},
                                                                             361
{
  "id": "statement:pikachu_contains_red",
                                                                             363
  "taxon": "taxon:pokemon_025",
  "character": "character:all_colors",
                                                                             365
  "value": "state:colors_red",
  "frequency": 1
                                                                             367
},
  "id": "statement:pikachu_contains_no_brown",
  "taxon": "taxon:pokemon_025",
                                                                             371
  "character": "character:all_colors",
  "value": "state:colors_brown",
                                                                             373
  "frequency": 0
},
                                                                             375
{
                                                                             376
  "id": "statement:pikachu_contains_no_white",
                                                                             377
  "taxon": "taxon:pokemon_025",
                                                                             378
  "character": "character:all_colors",
                                                                             379
  "value": "state:colors_white",
                                                                             380
  "frequency": 0
},
                                                                             382
  "id": "statement:raichu_contains_yellow",
                                                                             384
  "taxon": "taxon:pokemon_026",
  "character": "character:all_colors",
                                                                             386
  "value": "state:colors_yellow",
  "frequency": 1
                                                                             388
},
                                                                             390
  "id": "statement:raichu_contains_no_black",
                                                                             391
  "taxon": "taxon:pokemon_026",
                                                                             392
  "character": "character:all_colors",
                                                                             393
  "value": "state:colors_black",
                                                                             394
  "frequency": 0
                                                                             395
},
                                                                             397
  "id": "statement:raichu_contains_no_red",
  "taxon": "taxon:pokemon_026",
                                                                             399
  "character": "character:all_colors",
  "value": "state:colors_red",
                                                                             401
  "frequency": 0
},
                                                                             403
  "id": "statement:raichu_contain_brown".
                                                                             405
  "taxon": "taxon:pokemon_026",
  "character": "character:all_colors",
                                                                             407
  "value": "state:colors_brown",
  "frequency": 1
                                                                             409
},
                                                                             410
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```
411
      "id": "statement:raichu_contains_white",
                                                                                 412
      "taxon": "taxon:pokemon_026",
                                                                                 413
      "character": "character:all_colors",
                                                                                 414
      "value": "state:colors_white",
                                                                                 415
      "frequency": 1
                                                                                 416
    }
                                                                                 417
  ],
  "userRequirements": [
                                                                                 419
    {
                                                                                 420
      "id": "requirement:catch",
                                                                                 421
      "title": "Catching required",
      "warning": "To answer this, you have to catch the Pokémon
                                                                                 423
first.",
      "description": "1. Select a pokéball color.n2. Hold the ball,
                                                                                 425
spinning it a few times.n3. Fling the pokéball towards the Pokémon,
adjusting for the curveball generated from spinning the ball.n4. Try to
                                                                                 427
hit the circle when it is at its smallest.",
                                                                                 428
      "descriptionUrl":
"https://niantic.helpshift.com/hc/en/6-pokemon-go/faq/102-finding-catchi
                                                                                 430
ng-wild-pokemon/"
                                                                                 431
    }
                                                                                 432
  ],
  "externalServices": [
                                                                                 434
    {
      "id": "service:wikidata",
                                                                                 436
      "title": "Wikidata",
                                                                                 437
      "url": "https://www.wikidata.org/w/api.php"
                                                                                 438
    },
    {
                                                                                 440
      "id": "service:example_api",
      "title": "Example",
                                                                                 442
      "description": "Gives the probability for a taxon, given its
                                                                                 443
weight and location.",
      "url": "https://api.example.com"
                                                                                 445
    }
                                                                                 446
  ],
                                                                                 447
  "mediaElements": [
                                                                                 449
      "id": "media:pointy_tail",
                                                                                 450
      "mediaElement": {
                                                                                 451
        "file": [
                                                                                 453
             "url":
"https://github.com/WouterKoch/Clavis/raw/main/Keys/Images/pointy_100.pn
g",
             "width": 100.
                                                                                 457
             "height": 100,
             "license": "https://creativecommons.org/licenses/by/4.0/",
                                                                                 459
             "creator": "person:wouterkoch"
                                                                                 460
          },
                                                                                 461
          {
                                                                                 462
```

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```
"url":
                                                                                   463
"https://github.com/WouterKoch/Clavis/raw/main/Keys/Images/pointy_250.pn
g",
                                                                                   465
             "width": 250,
             "height": 250,
                                                                                   467
             "license": "https://creativecommons.org/licenses/by/4.0/",
                                                                                   468
             "creator": "person:wouterkoch"
                                                                                   469
           }
         ]
                                                                                   471
       }
                                                                                   472
    },
                                                                                   473
       "id": "media:lobed_tail",
                                                                                   475
       "mediaElement": {
                                                                                   476
         "file": [
                                                                                   477
                                                                                   478
              "url":
                                                                                   479
"https://github.com/WouterKoch/Clavis/raw/main/Keys/Images/lobed_100.png
                                                                                   480
             "width": 100,
                                                                                   482
             "height": 100,
                                                                                   483
             "license": "https://creativecommons.org/licenses/by/4.0/",
                                                                                   484
              "creator": "person:wouterkoch"
           },
                                                                                   486
              "url":
"https://github.com/WouterKoch/Clavis/raw/main/Keys/Images/lobed_250.png
                                                                                   490
             "width": 250,
             "height": 250,
                                                                                   492
             "license": "https://creativecommons.org/licenses/by/4.0/",
              "creator": "person:wouterkoch"
                                                                                   494
           }
                                                                                   495
         ]
      }
                                                                                   497
    }
                                                                                   498
  ]
                                                                                   499
}
                                                                                   501
```

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