7 Deindexing reason in the SciELO Brazil collection

On the notebook regarding the number of indexed/deindexed/active journals, we weren't able to distinguish between a *renamed* and a *deceased* journal. Here the goal is to distinguish between these and to get more information about the suspending reason, limited to a single collection: `scl` (Brazil).

7.1 Using the ArticleMeta API

Using the ArticleMeta API[1], we can get the actual status of every journal in any collection, as well as its history. In order to get the renamed entries, it has an information that the reports don't have: the previous/next titles of a journal.

In PyPI, it's the `articlemetaapi` package, not `articlemeta`, and it should be upgraded/installed with something like `pip install 'articlemetaapi>=1.26.4'`, since the former versions aren't prepared for Python 3.7.

Let's use it:

In [1]:
```
from articlemeta.client import RestfulClient
```

To get all the journals from the `scl` collection:

In [2]:
```
%%time
journals = list(RestfulClient().journals(collection="scl"))
```

```
CPU times: user 3.47 s, sys: 655 ms, total: 4.13 s
Wall time: 3min 16s
```

That's it! It's *really* slow as it's making a request for each journal. Without the `collection` parameter, it would grab every journal in the SciELO network.

In [3]:
```
len(journals) # scl only
```

Out [3]:
```
366
```

7.1.1 Grabbing the history including the titles

We can get the full history from it as a dataframe, including some extra fields from properties of the journal objects:

In [4]:
```
import pandas as pd
```

In [5]:
```
histories = pd.DataFrame([history + (journal.current_status,
                                     journal.scielo_issn,
                                     journal.title,
                                     journal.previous_title,
                                     journal.data.get("v710", [{}])[0]
                                                 .get("_", None))
                          for journal in journals
                          for history in journal.status_history],
                         columns=["date", "status", "reason", "current_status",
                                  "issn", "title",
                                  "previous_title", "next_title"])
print(histories.shape) # There are more than a row for each journal
histories.head(15)
```

[1] https://pypi.org/project/articlemetaapi

```
(457, 8)
```

Out [5]:

The table is in the next page ...

	date	status	reason	current_status	issn	title	previous_title	next_title
0	2006-02-08	current		deceased	1676-5648	RAE eletrônica	None	None
1	2010-12	deceased		deceased	1676-5648	RAE eletrônica	None	None
2	2004-01-08	current		deceased	0101-8108	Revista de Psiquiatria do Rio Grande do Sul	None	Trends in Psychiatry and Psychotherapy
3	2012-01	deceased		deceased	0101-8108	Revista de Psiquiatria do Rio Grande do Sul	None	Trends in Psychiatry and Psychotherapy
4	2000-02-13	current		suspended	0034-7701	Revista de Antropologia	None	None
5	2008-08	suspended	suspended-by-committee	suspended	0034-7701	Revista de Antropologia	None	None
6	1999-12-16	current		suspended	0102-261X	Revista Brasileira de Geofísica	None	None
7	2003	suspended	suspended-by-committee	suspended	0102-261X	Revista Brasileira de Geofísica	None	None
8	2008	current		suspended	0102-261X	Revista Brasileira de Geofísica	None	None
9	2012-06	suspended	suspended-by-committee	suspended	0102-261X	Revista Brasileira de Geofísica	None	None
10	2005-11-23	current		deceased	1516-9332	Revista Brasileira de Ciências Farmacêuticas	Revista de Farmácia e Bioquímica da Universida...	Brazilian Journal of Pharmaceutical Sciences
11	2009-09-15	deceased		deceased	1516-9332	Revista Brasileira de Ciências Farmacêuticas	Revista de Farmácia e Bioquímica da Universida...	Brazilian Journal of Pharmaceutical Sciences
12	2006-03-07	current		deceased	0104-5687	Pró-Fono Revista de Atualização Científica	None	Jornal da Sociedade Brasileira de Fonoaudiologia
13	2011-05	deceased		deceased	0104-5687	Pró-Fono Revista de Atualização Científica	None	Jornal da Sociedade Brasileira de Fonoaudiologia
14	2002-10-25	current		suspended	0103-1759	Sba: Controle & Automação Sociedade Brasileira...	None	None

That's based in the Data dictionary of the SciELO's model[2], which states in its section *"4 - TITLE database"* that `v610` means *previous title* and `v710` means *new title*. Most names have an alias to avoid direct access to the raw data, but the *new title* field didn't have an alias as of the time of writing.

From the above dataset, we can get the pair of ISSNs regarding each title change. We'll get both the `previous_title` to `title` matching pairs and the `title` to `next_title` matching pairs, removing the duplicates. That will get all changes even if they're not completely described in both entries of a pair.

In [6]:

```
issn_changes_raw = pd.concat([
    pd.merge(histories[histories["next_title"].notna()], histories,
             how="left", left_on="next_title", right_on="title"),
    pd.merge(histories, histories[histories["previous_title"].notna()],
             how="right", left_on="title", right_on="previous_title"),
])[["current_status_x", "issn_x", "issn_y"]].dropna().drop_duplicates().rename(
    columns={"issn_x": "from", "issn_y": "to"},
)
print(issn_changes_raw.shape)
issn_changes_raw
```

```
(39, 3)
```

Out [6]:

	current_status_x	from	to
0	deceased	0101-8108	2237-6089
2	deceased	1516-9332	1984-8250
4	deceased	0104-5687	2179-6491
8	deceased	0101-8175	1984-4670
10	deceased	0101-3122	2317-1537
12	deceased	2179-6491	2317-1782
14	deceased	0373-5524	1413-7739
18	deceased	0100-4239	0373-5524
22	deceased	0100-7386	1678-5878
26	deceased	0034-7108	1519-6984
28	deceased	0102-2555	1517-9702
32	deceased	1517-7491	1806-8324
34	deceased	0103-3131	1677-0420
38	deceased	0103-0663	1517-7491
42	deceased	1413-7739	1679-8759
44	deceased	1516-8034	2317-6431
46	deceased	0001-3714	1517-8382
48	deceased	0071-1276	0103-9016
50	deceased	0102-3586	1806-3713
52	deceased	0100-4158	1982-5676
56	deceased	0100-8455	1415-4757
58	deceased	0104-7930	1678-9199
60	deceased	1413-9251	1519-7077
62	deceased	0301-8059	1519-566X
66	deceased	0041-8781	1807-5932
68	deceased	1809-4872	1809-4864
70	deceased	0004-2730	2359-3997
72	deceased	1517-3151	2446-4740
74	deceased	0101-9880	2237-9363
76	deceased	1415-5419	2176-9451
78	deceased	1677-0420	2197-0025

Continued on next page

[2] https://docplayer.com.br/939603-Bireme-opas-oms-centro-latino-americano-e-do-caribe-de-informacao-em-ciencias-da-saude-metodologia-scielo-dicionario-de-dados-do-modelo-scielo.html

	current_status_x	from	to
82	deceased	0034-7299	1808-8694
84	deceased	1983-3083	2448-2455
86	deceased	0370-4467	2448-167X
88	current	2448-2455	2448-2455
89	deceased	1516-8484	2531-1379
91	deceased	0080-2107	2531-0488
30	deceased	0104-8023	1984-0292
90	deceased	1806-0013	2595-3192

There's a single name that appeared as `next_title` but it's the current title:

In [7]:
```
histories[histories["issn"] == "2448-2455"]
```

Out [7]:

	date	status	reason	current_status	issn	title	previous_title	next_title
264	2016	current		current	2448-2455	Journal of Physical Education	Revista da Educação Física / UEM	Journal of Physical Education

Cleaning this is easy: when a journal is renamed and other ISSN is issued, the current status of the old entry is `deceased`.

In [8]:
```
issn_changes = issn_changes_raw \
    [issn_changes_raw["current_status_x"] == "deceased"] \
    [["from", "to"]]
issn_changes.shape
```

Out [8]:
```
(38, 2)
```

7.1.2 Analysing the directed graph of renamed journals' ISSNs with NetworkX

In [9]:
```
import matplotlib.pyplot as plt
import networkx as nx
%matplotlib inline
```

We can convert the last dataframe to a directed graph object:

In [10]:
```
issn_changes_graph = nx.DiGraph(issn_changes.values.tolist())
```

How many nodes (ISSNs) are there?

In [11]:
```
len(issn_changes_graph.nodes)
```

Out [11]:
```
71
```

Can we partition it as disjoint sets of connected nodes? How many partitions are there?

In [12]:
```
connected_nodes = \
    list(nx.connected_components(issn_changes_graph.to_undirected()))
print(len(connected_nodes))
connected_nodes
```

```
33
```

Out [12]:

```
[{'0101-8108', '2237-6089'},
 {'1516-9332', '1984-8250'},
 {'0104-5687', '2179-6491', '2317-1782'},
 {'0101-8175', '1984-4670'},
 {'0101-3122', '2317-1537'},
 {'0100-4239', '0373-5524', '1413-7739', '1679-8759'},
 {'0100-7386', '1678-5878'},
 {'0034-7108', '1519-6984'},
 {'0102-2555', '1517-9702'},
 {'0103-0663', '1517-7491', '1806-8324'},
 {'0103-3131', '1677-0420', '2197-0025'},
 {'1516-8034', '2317-6431'},
 {'0001-3714', '1517-8382'},
 {'0071-1276', '0103-9016'},
 {'0102-3586', '1806-3713'},
 {'0100-4158', '1982-5676'},
 {'0100-8455', '1415-4757'},
 {'0104-7930', '1678-9199'},
 {'1413-9251', '1519-7077'},
 {'0301-8059', '1519-566X'},
 {'0041-8781', '1807-5932'},
 {'1809-4864', '1809-4872'},
 {'0004-2730', '2359-3997'},
 {'1517-3151', '2446-4740'},
 {'0101-9880', '2237-9363'},
 {'1415-5419', '2176-9451'},
 {'0034-7299', '1808-8694'},
 {'1983-3083', '2448-2455'},
 {'0370-4467', '2448-167X'},
 {'1516-8484', '2531-1379'},
 {'0080-2107', '2531-0488'},
 {'0104-8023', '1984-0292'},
 {'1806-0013', '2595-3192'}]
```

In [13]:

```python
len(nx.dfs_tree(issn_changes_graph, "1679-8759"))
# issn_changes_graph.in_degree
```

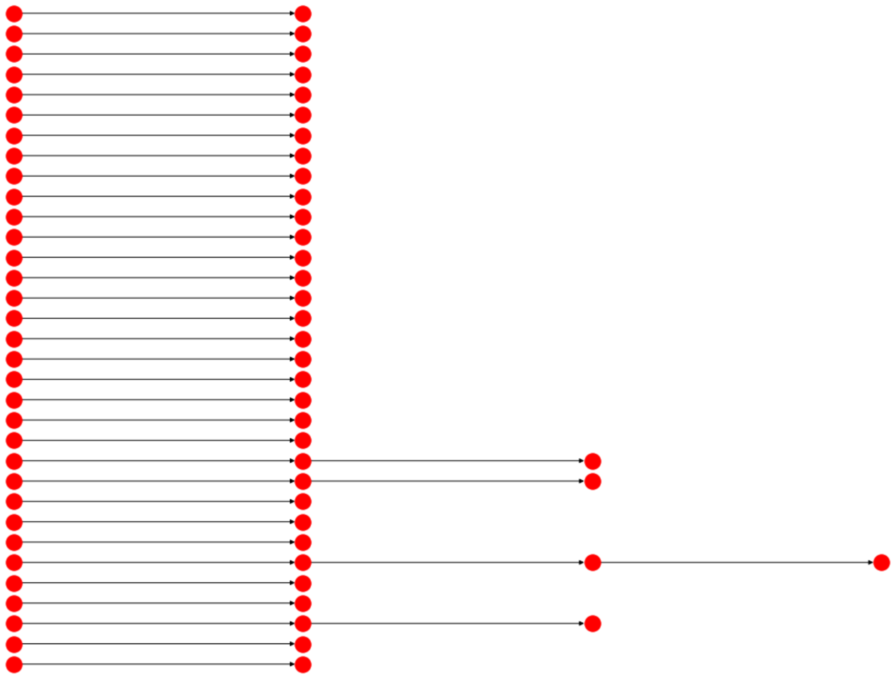
Out [13]:

```
1
```

Each set represents an article that had been renamed:

In [14]:

```python
plt.figure(figsize=(16, 12))
nx.draw(issn_changes_graph,
        pos={node: (nidx, pidx)
             for pidx, partition in enumerate(connected_nodes)
             for nidx, node in enumerate(sorted(
                 partition,
                 reverse=True,
                 key=lambda n: len(nx.dfs_tree(issn_changes_graph, n)),
             ))
            },
       )
```



7.1.3 Deindexing statistics

This finishes our analysis of the deindexing reason in the `scl` collection:

In [15]:
```
full_status_stats = pd.DataFrame(histories
    .sort_values("date")
    .assign(renamed=lambda df: df["issn"].isin(issn_changes["from"]))
    .groupby("issn")
    .agg("last")
    .fillna("")
    .groupby(["current_status", "reason", "renamed"])
    .size()
    .rename("count")
)
full_status_stats
```

Out [15]:

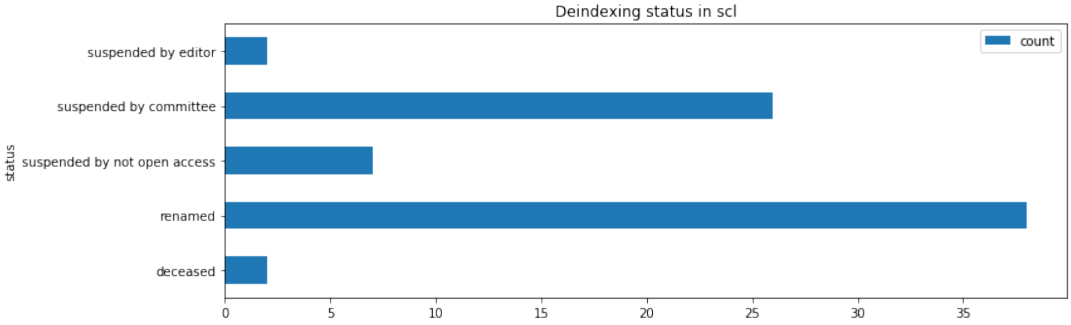
current_status	reason	renamed	count
current		False	291
deceased		False	2
deceased		True	38
suspended	not-open-access	False	7
suspended	suspended-by-committee	False	26
suspended	suspended-by-editor	False	2

Or, joining the three-layered index into a single string:

In [16]:
```
status_stats = full_status_stats.assign(
    status=["renamed" if renamed
                      else reason.replace("not-", "suspended-by-not-")
                                 .replace("-", " ")
                           or current_status
            for current_status, reason, renamed
            in full_status_stats.index.values
    ]
).set_index("status")
status_stats.drop("current").plot.barh(figsize=(12, 4),
                                       title="Deindexing status in scl")
status_stats
```

Out [16]:

status	count
current	291
deceased	2
renamed	38
suspended by not open access	7
suspended by committee	26
suspended by editor	2



7.2 Using the status changes report

We can't get the information regarding the *renamed* entries using just the CSV reports, but the remaining information is there. We can use the `journal.csv`, but an analysis of it had already been performed in the notebook that analyzed the number of indexed journals. As an alternative, let's open the `journal_status_changes.csv`:

In [17]:
```
journals_status_changes = pd.read_csv("tabs_bra/journals_status_changes.csv")
print(journals_status_changes.shape)
journals_status_changes.columns
```

```
(457, 23)
```

Out [17]:
```
Index(['extraction date', 'study unit', 'collection', 'ISSN SciELO', 'ISSN's',
       'title at SciELO', 'title thematic areas',
       'title is agricultural sciences', 'title is applied social sciences',
       'title is biological sciences', 'title is engineering',
       'title is exact and earth sciences', 'title is health sciences',
       'title is human sciences', 'title is linguistics, letters and arts',
       'title is multidisciplinary', 'title current status',
       'status change date', 'status change year', 'status change month',
       'status change day', 'status changed to', 'status change reason'],
      dtype='object')
```

It has few columns. Let's see the first few entries.

In [18]:

```
journals_status_changes.head().T
```

Out [18]:

	0	1	2	3	4
extraction date	2018-09-13	2018-09-13	2018-09-13	2018-09-13	2018-09-13
study unit	journal	journal	journal	journal	journal
collection	scl	scl	scl	scl	scl
ISSN SciELO	1676-5648	1676-5648	0101-8108	0101-8108	0034-7701
ISSN's	1676-5648	1676-5648	0101-8108	0101-8108	0034-7701
title at SciELO	RAE eletrônica	RAE eletrônica	Revista de Psiquiatria do Rio Grande do Sul	Revista de Psiquiatria do Rio Grande do Sul	Revista de Antropologia
title thematic areas	Applied Social Sciences	Applied Social Sciences	Health Sciences	Health Sciences	Human Sciences
title is agricultural sciences	0	0	0	0	0
title is applied social sciences	1	1	0	0	0
title is biological sciences	0	0	0	0	0
title is engineering	0	0	0	0	0
title is exact and earth sciences	0	0	0	0	0
title is health sciences	0	0	1	1	0
title is human sciences	0	0	0	0	1
title is linguistics, letters and arts	0	0	0	0	0
title is multidisciplinary	0	0	0	0	0
title current status	deceased	deceased	deceased	deceased	suspended
status change date	2006-02-08	2010-12	2004-01-08	2012-01	2000-02-13
status change year	2006	2010	2004	2012	2000
status change month	2	12	1	1	2
status change day	8	NaN	8	NaN	13
status changed to	current	deceased	current	deceased	current
status change reason	NaN	NaN	NaN	NaN	NaN

We need to see the `title current status` and the `status change reason` regarding the last status change entry.

In [19]:

```
last_in_history = (journals_status_changes
    .sort_values("status change date")
    .fillna("")
    .groupby("ISSN SciELO")
    .agg("last")
)
```

In [20]:

```
reasons_from_csv = pd.DataFrame(last_in_history
    .groupby(["title current status", "status change reason"])
    .size()
    .rename("count")
)
reasons_from_csv
```

Out [20]:

title current status	status change reason	count
current		291
deceased		40
suspended	not-open-access	7
suspended	suspended-by-committee	26
suspended	suspended-by-editor	2

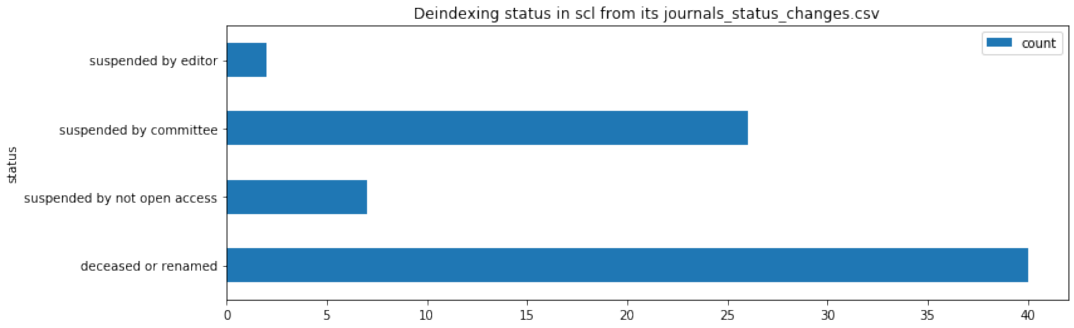
Which can appear misleading because *deceased* means *deceased or renamed*. A visualization alternative:

In [21]:

```
status_from_csv = reasons_from_csv.assign(
    status=[reason.replace("not-", "suspended-by-not-")
                  .replace("-", " ")
            or current_status.replace("ed", "ed or renamed")
            for current_status, reason in reasons_from_csv.index.values
    ]
).set_index("status")
status_from_csv.drop("current").plot.barh(
    figsize=(12, 4),
    title="Deindexing status in scl from its journals_status_changes.csv"
)
status_from_csv
```

Out [21]:

status	count
current	291
deceased or renamed	40
suspended by not open access	7
suspended by committee	26
suspended by editor	2



To segregate the *deceased* from *renamed*, we need the information from ArticleMeta, as had been done before in this notebook.