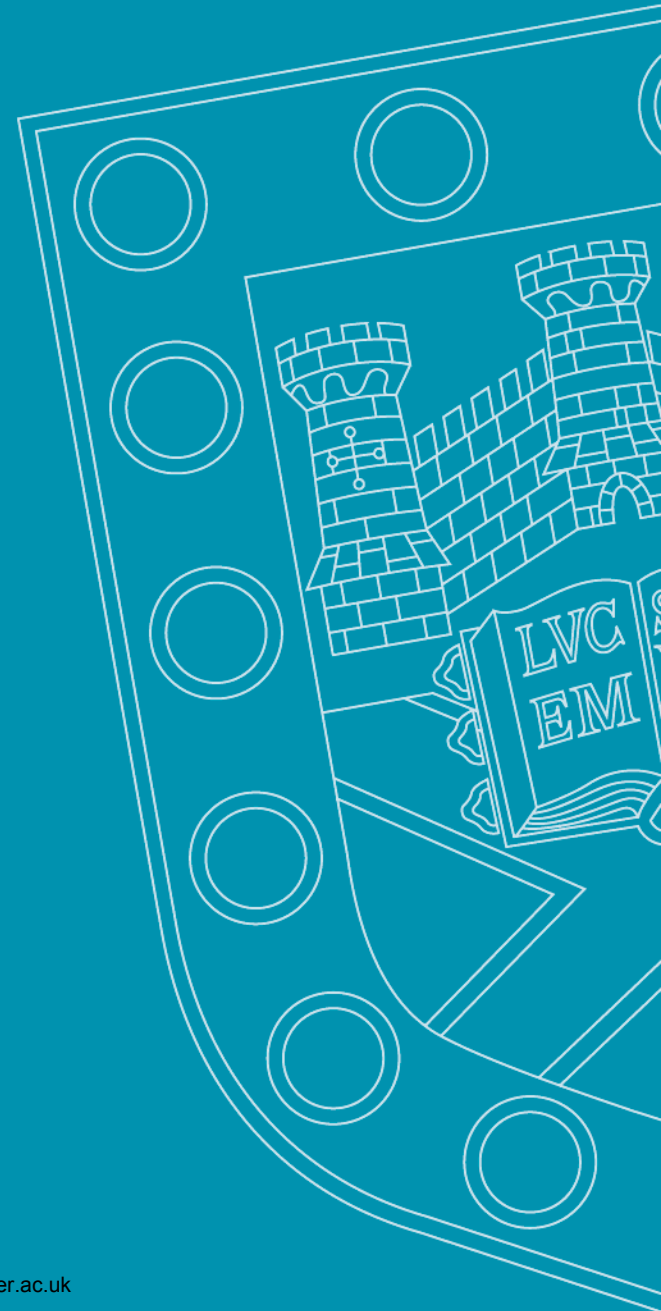


# How theories of information can contribute to the development of literature search methods for realist reviews

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# How theories of information can contribute to the development of literature search methods for realist reviews

1. Literature searching: an overview
2. Two theories of information in information science
3. Literature searching: re-visited

I have no actual or potential conflict of interest in relation to this presentation. The views expressed are mine and not necessarily those of the Collaboration for Leadership in Applied Health Research and Care South West Peninsula (PenCLAHRC) or the University of Exeter Medical School.



# 1. Literature searching: an overview



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# Literature searching for “traditional” systematic reviews

## Traditional systematic reviews:

- Focus is: “What intervention works?”
- Seek to answer pre-specified, clearly bounded, and topic-based questions.
- Require identification of all available evidence on the specified topic to answer the question.

## Benefits of bibliographic databases:

- Cover a wide range of journals ✓
- Enable search strategies to be transparently documented ✓



# Literature searching for realist reviews

## Realist reviews:

- Focus is: “What works for whom, in what contexts and why?”
- Require identification of explanatory theories.
- Avenues of enquiry emerge as the review progresses.

## Problems with bibliographic databases

- Best used for topic-based searches?
- Too rigid to respond to development of information needs?



# Literature searching for realist reviews

The **CLUSTER search method** (Booth 2013).

CLUSTER is based on six commonly used information retrieval methods (see Bates 1989):

1. **Footnote chasing** (checking the references in a study/backwards citation chasing)
2. **Citation searching** (forward citation chasing)
3. **Journal run** (manual searching of key journals across a specified time period)
4. **Area scanning** (using the physical or online layout of a resource)
5. **Subject searching in bibliographies** (using subject specific bibliographies)
6. **Author searching**

**Benefits of CLUSTER method:**

- Can find “associated” studies, which might benefit identification of theories ✓
- Can be used to sample studies from different topic areas ✓



# Berrypicking – an alternative approach to searching (Bates, 1989)

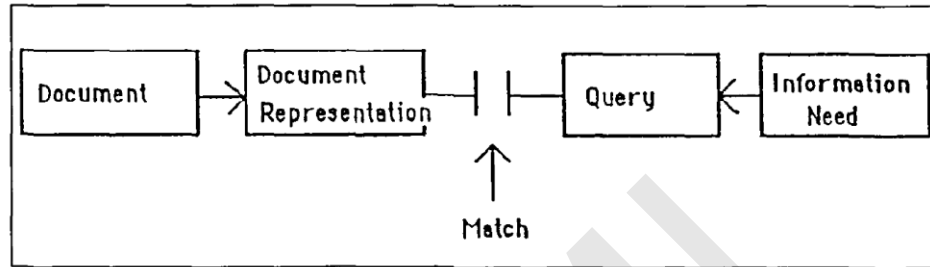


Figure 1: *The classic information retrieval model*

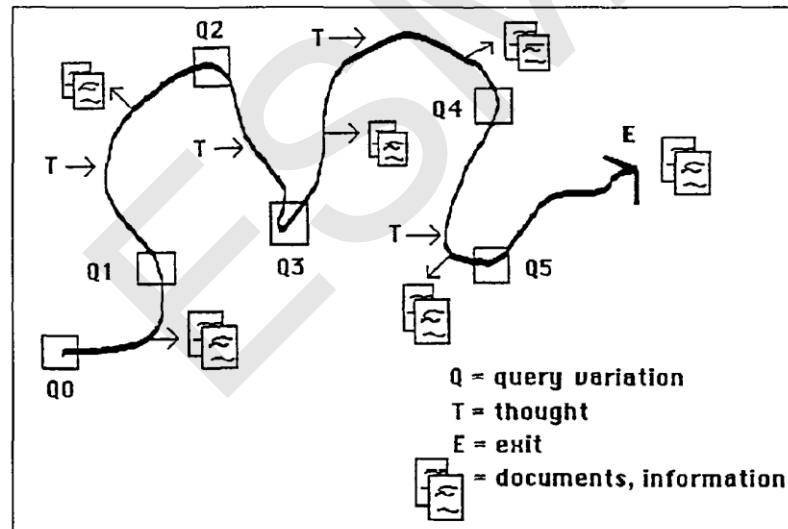


Figure 2: *A berrypicking, evolving search*



## Information searching: an evolutionary explanation

“[I]t seems that one can posit a straightforward evolutionary explanation for curiosity [i.e. searching for information]...

“[E]xposure to new environments or new stimuli or new information all bring with them the possibility of discovering new food sources, new mates, [etc].

“Thus, the ability to move, combined with the ability to sense the environment, had a positive payoff for the animal with these capabilities.”

(Bates 2007)





## 2. Theories of information in information science: Bates and Hjørland

ESMI



# Bates' 'objective' theory of information

“Information is the pattern of organization of matter and energy” (Edwin Parker *cited by* Bates 2006).

“Information is the pattern of organization of the matter of rocks, of the earth, of plants, of animal bodies, or of the brain matter. Information is also the pattern of organization of the energy of my speech as it moves the air, or of the earth as it moves in an earthquake” (Bates 2006).

**“Information exists independently of living beings** in the structure, pattern, arrangement of matter and in the pattern of energy throughout the universe, **and would do so whether or not any living being were present to experience the information**” (Bates 2006, my emphasis).



# Hjørland's theory of information: subjective/situational

“Information is a difference that makes a difference...” (Gregory Bateson *cited by* Hjørland 2007).

“...(for somebody or for something or from a point of view)”.

“While I do agree with Bates that, for example, genetic information is encoded in the DNA, I do not consider this information to be independent of the biological theories. **It may be ‘objective’ in the way that different observers describe it in the same way (although I prefer to use the term intersubjective in this connection). But this objectivity (or intersubjectivity) is dependent on a scientific consensus in biology**” (Hjørland 2007, my emphasis).

The “best way to understand information is to study the knowledge domains of discourse communities” (Hjørland 1997).



### 3. Literature searching: re-visited

ESMI



# Domain analysis

1. Producing and evaluating literature guides and subject gateways;
2. Producing and evaluating special classifications and thesauri;
3. Research on and competencies in indexing and retrieving information in specialties;
4. Knowledge about empirical user studies in subject areas;
5. Producing and interpreting bibliometric studies;
6. Historical studies of information structures and services in domains;
7. Studies of documents and genres in knowledge domains;
8. Epistemological and critical studies of different paradigms, assumptions and interests in domains;
9. Knowledge about terminological studies, LSP (languages for special purposes) and discourse analysis in knowledge fields;
10. Knowledge about and studies of structures and institutions in scientific and professional communication in a domain
11. Knowledge about methods and results from domain analytic studies about professional cognition, knowledge representation in computer science and artificial intelligence

(Hjørland 2002).



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# Weaknesses of citation analysis from a domain analytic viewpoint

**1. The results of citation analysis will depend on the database that is used.**

“When journals are selected to represent a discipline or a domain, the actual selection reveals implicit definitions about the discipline.”

**2. Citation maps reflect general and topic specific citation behaviours.**

For example, the practice of citing a law or principle rather than an original reference, so that “outstanding achievements often receive less than 50% of the citations they ought to be credited with.”

**3. Some theories or authors may be in vogue and overrepresented relative to their scientific value.**

(Hjørland 2002)



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# Literature searching re-visited: ‘subjective/situational’ theory into ‘domain analytic’ practice

## 1. Domain analysis of information resources, e.g.:

- consideration of databases on a topical basis;
- consideration of databases according to how they define and represent fields of study?

## 2. Domain analysis as a theoretical foundation for “the identification of alternative hypotheses, research traditions and theories” (Booth 2013).

## 3. Domain analysis and user studies (e.g. Talja 2003).



**Thank you for listening**

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