

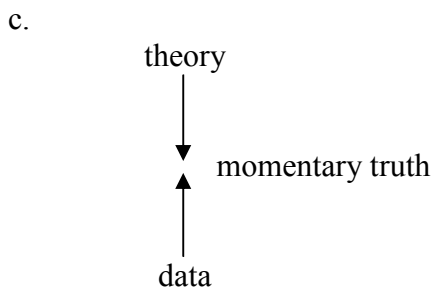
this handout and some of the references quoted at
www.unice.fr/scheer/

A PROPOS DE QUELQUES TRIVIALITES AUJOURD'HUI SUBMERGEES PAR L'UTILITARISME, LA TECHNOLOGIE ET L'EMPIRISME

1. Data and theory

- (1) consubstantialité
 - a. in all scientific endeavour and since Antiquity, the relationship between data and theory is **dialectic** in kind:
 - 1. there is no theory without data – trivial
 - 2. there are no data without theory – less trivial, often obscured or denied todayNo data without theory = NDWT
 - b. hypothetico-deductive method
 - hypothetico = theory, expectation, hypothesis (top down)
 - deductive = based on data (bottom-up)

the momentary (scientific) truth is the current contact point between data (bottom-up) and expectation (theory, top-down).



- d. this is **dualist** thinking
 - the monist alternative is called empiricism: accumulation of data (or rather: of facts, see below) alone produces insight and knowledge.
- (2) consequences
 - a. there is no such thing as "scientific truth". There is only a state of knowledge which at a given point in time is the best we can do.
 - b. the typical case is not that old theories are wrong. They are correct – but incomplete.
==> Newton > Einstein

- c. I know that I know nothing (Socrates)
as discoveries and knowledge progress, the number of open questions does not decrease, but increase. This is because every answer to a question raises ten new questions that could not even be asked before.
Naïve positivism of the 2nd half of the 19th century thought that the number of questions is finite and we soon will have drawn all secrets from nature.
 - d. there will always be a place for God
hidden in the area beyond our knowledge. There will always be such an area, no matter how much knowledge progresses.
==> what was before the Big Bang? Why did the Big Bang occur? Etc.
- (3) definition of progress in science
- a. when the number of candidates for the explanation of how things work (theories) decreases.
==> Popper's falsificationism
 - b. when our knowledge becomes less incomplete
Newton > Einstein
- (4) sociology
- a. I'm grateful you showed that I was wrong
 - b. is the attitude that follows from falsificationism. But in practice, the social structure of science does not work this way: there are cycles, and new ideas break through only by killing off old ideas and structures: Kuhn (1962).
 - c. Max Planck puts it this way:
An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: What does happen is that the opponents gradually die out.

2. Humans cannot observe data – they can only construct them

- (5) NDWT
fact vs. datum
- a. Saussure: le point de vue crée l'objet
Louis Pasteur: Dans les champs de l'observation, le hasard ne favorise que les esprits préparés
 - b. in adult sciences (and especially in physics) there is a split between experimentalists and theoreticians.
One cannot live without the other: consubstantialité.
 - c. theory creates data
that were only noise before
by raising questions that could not even be asked before
Two examples of many.
 - 1. Then I would feel sorry for the good Lord
Einstein's Theory of Relativity predicts that light bends under gravitational influence, and Arthur Eddington set out to test this by measuring the 1919 West Africa eclipse. When a journalist asked what Einstein would do if Eddington's observations failed his theory, he answered: "Then I would feel sorry for the good Lord. The theory is correct."

2. discovery of Neptune

observational data (acquired by Johann Gottfried Galle in 1846) created by the theory of Jean Joseph Verrier, who had interpreted irregularities in the movement of Uranus as an effect of the presence of another mass. He had then calculated the weight and the position of this other mass, i.e. Neptune. Galle only had to adjust his telescope according to the prediction.

The irregular movement of Uranus is nothing unless it is recognized to be a problem for a theory. It is only then that it becomes a datum. Without theoretical relevance it is just a fact.

d. Data don't exist in nature.

Only theory transforms facts into data.

Only data are relevant in science.

Only humans build theories, hence data are an artefact, created by humans.

(6) example from linguistics

only humans decide which facts are data

a. when the PFC corpus is coded for, say, schwa, there are numerous cases where the value of a sound cannot be determined, even when the number of transcribers is multiplied.

b. in case it is decided that a sound is a schwa, whether or not it is coded as such depends on a number of further decisions, since it may also represent a transitional sound in word-final position, rather than a vowel that is linguistically relevant.

c. hence it is the linguist, not the real world, who decides which real-world item is knighted a piece of linguistically relevant data, i.e. has the right to impact linguistic reasoning.

d. another example:

electri[s]-ity

(7) NDWT

the myth of "raw data"

there is no one-to-one blueprint of reality

a. established in philosophy at least since Kant:

humans can observe the real world (thing-in-itself, or noumenon) only through the perception of one of their five senses (and this is true whatever sophisticated aiding machines will be plugged in).

b. the 5 senses thus stand in the way of a direct perception,
and we know for sure from modern experimentation that they are not reliable:
many established facts such as

1. [categorical perception](#),

2. the [McGurk effect](#)

3. or [dichotic perception](#)

show that the human percept may be dramatically distinct from the signal that has reached his senses.

That is, the reality that humans talk about is never the real world itself, but properties thereof reworked and augmented by some mechanism of our cognitive and perceptual apparatus, whose workings we do not understand today.

- c. current quantum physics
is entirely based on this: the fact of observing modifies the object observed (recall Saussure), to the effect that

there is no such thing as an observational fact independent of the observation,

and hence of the observer. Another way of putting this confirmation of the kantian insight is this:

"quantum mechanics requires interpretation before it describes the experience of an observer. [...] [T]he behavior of a system after observation is completely different than the usual behavior" ([Wikipedia](#)).

(8) "subjective" observers

there is nothing wrong with that, and no alternative anyway

- a. it is never the case that somebody collects data without purpose: you collect data because you have an expectation, because you are looking for something.
==> you only ever find what you are looking for (recall Saussure: le point...)
- b. there is no reason to believe that man was or will be unable to make advances in the understanding of himself or the world around him.
- c. scientific understanding has always been made by people who were drowned in culture, sociology, systems of belief (typically of religious kind) etc., and therefore have strong expectations and preconceptions.
- d. reason and facts always ended up prevailing, even if it is true that institutional and belief-related brakes may have slowed down the emergence of understanding.
- e. hence there is nothing wrong with investigators being engaged in systems of belief, which may strongly structure the way they proceed in order to know: Feyerabend (1976) explains that
 - 1. any motivation for setting out to discover is a good motivation, and the larger the spectrum, the better for science.
 - 2. hypotheses of whatever origin, though, need to pass the filter of argumentation.
 - 3. one thing that can and ought to be done is to be aware of, and to make explicit, the biases that exist and one is aware of.

(9) a machine alone is nothing: it is designed for a purpose and with expectations

- a. physicists may put a lot of energy, money, devotion and sophistication into constructing the tools that they need, for example a particle accelerator.
- b. they never lose sight of the fact, though, that having built the [CERN machine](#) for example is having done zero physics.
- c. in order to do physics, they need to put their tool to use, and in order to do so, they need to design an experiment that complies with the technical properties of the machine and promises a result: they need a hypothesis, and a theory.
- d. and they need to know what they are looking for.
Browsing data when you don't know what you are looking for is putting yourself in the aforementioned situation where somebody may stare at a pattern for ages without recognizing its contours.
- e. [serendipity](#), which has produced a number of scientific discoveries, does not withstand. Louis Pasteur put it this way: "luck favours the prepared mind" ("Dans les champs de l'observation, le hasard ne favorise que les esprits préparés").

(10) empiricist propaganda

- a. the myth of the existence of objective, uninterpreted or raw data is typically used in order to discredit a group of people from different theoretical or philosophical quarters, or who use a different methodology: e.g.
 - corpus vs. elicitation
 - phonetics vs. phonology
 - statistics vs. reasoningetc.
- b. the difference between distinct instruments is not that one produces objective, exact and reliable data, while the other is biased.

It is only the fact that the bias (i.e. what exactly lies between the observer and the real world) of one party is made explicit, while the one of the other is denied and tried to be kept hidden under the rug.
- c. materialism: naive science
 1. materialism
 - = monism
 - = I believe only in what I see, in what I can measure. The rest does not exist, and if somebody says it does he's an obscurantist who probably wants to reintroduce God through the back door.
 2. 17th century

Newton is charged of obscurantism because he talks about things that can't be measured and that are supposed to have an effect without contact: gravitation.
 3. 18th century

Hume & Locke (anglo-saxon empiricism) charge representatives of Cartesian thought of being "des philosophes spéculatifs".
There is no body and mind, there is only the body because you can't measure/see the mind.
==> today reductionists / eliminationists in Cognitive Science (brain-mind)
 4. 50s

Stephen Hawking, inventor of the Big Bang: charged to reintroduce God into the picture. The standard theory then was that the universe is static, in time and space: eternal and without movement.

3. Science and engineering

(11) science and engineering

- a.
 1. science is about to understand how nature (including humans) works
 2. engineering is about the construction of machines that do a specific task
- b. examples
 1. the atomic bomb

Scientists came to understand certain things about the atom (Marie Curie, Niels Bohr, Albert Einstein etc.).
From 1939 to 1947, the Manhattan Project (Robert Oppenheimer) built on this insight to construct the atomic bomb: 130.000 people employed, \$26 billion dollars (value 2015).
 2. Bernoulli's equation

Daniel Bernoulli understood some things about fluid dynamics, published in 1738.
An application 150 years later was the construction of airplanes: it allowed for the calculation of the lift force on an airfoil (i.e. how to construct wings).

3. 2007 Nobel Prize winner Albert Fert
One of the discoverers of giant magnetoresistance, based on work in the late 60s and 70s.
In the 90s, an application thereof was the construction of gigabyte hard disks.
 - c. typically,
 1. scientists have no idea of what their insight may be used for by engineers, i.e. which applications they will produce
 2. those who apply insight to construct machines and those who have produced the insight are not the same people.
 3. the application of the insight for the construction of machines takes place a long time after the insight was gained: decades, centuries...
 - d. the relationship is dialectic, but only one way
 1. scientific insight necessarily precedes engineering based on it.
You can't do engineering without scientific insight.
 2. scientific insight may be (and generally is) produced in complete absence of any idea or ambition regarding applications.
You can produce scientific insight without engineering.
- (12) engineering without science
except if you do engineering without insight, i.e. without applying anything
- a. that's the winning option these days – winning in the sense that you build machines that "do the job" and make a lot of money.
 - b. the purpose of engineering is to build a machine that works, i.e. "does the job". It is entirely irrelevant by which kind of workings this is achieved.
 - c. science tries to understand how nature works, but engineering does not care for building a machine that reproduces the workings of nature – it just cares for performance.
 - d. example
speech recognition and computer translation in the 90s at IBM.
Frederick Jelinek 1998: "Whenever I fire a linguist our system performance improves."
Today speech recognition is successful, but relies exclusively on chunking and statistics, i.e. workings that for sure have got nothing to do with how humans perceive and interpret speech.
 - e. ultimately,
implementing the workings of nature will of course be the winning option. But as of today the performance of bio-realistic approaches is way below brute statistical force.
Examples:
 - image compression: .jpg
 - connectionism

4. Dürrenmatt's Law

- (13) blinded by positivism and technology
- a. corpora and the computational instruments associated follow the law of all cutting-edge technology:
 1. there is a hype and enthusiasm around its sole technological properties,
 2. and there is the naïve, Titanic-based positivist belief that high-tech will produce results by its own.
 3. we all know, and history (of science) has shown, that it does not.
Advances are made when some technology serves a purpose, a hypothesis or a goal: there is no science outside the realm defined by the observation-expectation dialectic.
 - b. Friedrich Dürrenmatt's law
[in his play [The Physicists](#)]
whatever knowledge and technology is available will be used.
 1. the physicist Möbius has discovered the "Principle of Universal Discovery"
 2. knowing that its spreading will provoke murder and disease, he hides in a home for mentally ill.
 3. he is spied by other "patients", though, who work for leading states, and will be unable to keep his knowledge secret.
- (14) illustration of irrational behaviour #1
rankings (international, Shanghai etc.)
- a. everybody (who wants to know) knows that the [Shanghai ranking](#) is heavily based on Nobel Prizes, and that there are no Nobel Prizes in many disciplines, typically in the Humanities (except economics and literature).
 - b. nevertheless, the sole existence of the ranking, and its availability upon a mouse click for people who have no idea about academics but need to distribute money, make the ranking the absolute reference for officials and decision makers, who engage large-scale destructions of the academic landscape on the grounds of what they believe are reliable, objective and measurable facts (France is a case in point).
 - c. a ranking that exists will be used, no matter what its content and accuracy.
- (15) illustration of irrational behaviour #2
journal lists
- a. the European Science Foundation has created a Standing Committee for the Humanities, which builds a European Reference Index for the Humanities ([ERIH](#)). The purpose of this index is to create a list of relevant journals for various disciplines, where individual journals are ranked along a three-point scale A, B, C.
 - b. The authors of the 2007 edition of the index for linguistics introduce the list with the explicit mention that

"[a]s they stand, the lists are not a bibliometric tool. The ERIH Steering Committee and the Expert Panels therefore advise against using the lists as the only basis for assessment of individual candidates for positions or promotions or of applicants for research grants."
 - c. but this is of course exactly what happened: the existence of a ranking or a list will automatically lead to its application, no matter what the content, how they were built, whether they are significant or accurate etc.

(16) illustration of irrational behaviour #3

Google data

- a. everybody knows that raw extractions from Google cannot be used for linguistic inquiry because of a number of caveats, the most obvious and most invalidating being the fact that there is no control over the identity of those who produced the material: nobody knows what they are native speakers of (or indeed whether they are humans at all: machines translate webpages automatically).
- b. nonetheless, Google-based data are constantly used in the literature, typically preceded by the mention that the author is aware of the caveats.
- c. clarification:
 1. identifying material on Google and then testing it with native speakers is a perfectly regular strategy of investigation, and there is no objection.
 2. it is only when statistics are directly made on Google data that there is no way to control for the caveats.

A standard response is that caveat-created noise will lean out statistically and may be detected by this means. Or that the volume of this noise is so small that it won't have any significant impact on the result.

==> I have never seen a case where these assertions are checked against the data, the reason being that

 - separating noise from non-noise statistically is not an easy thing to do
 - but even if this is were done, the result could not be compared to the real amount of noise, which is unknown and cannot be determined.
- d. technology will be put to use just because it exists, no matter whether this is reasonable or not.

(17) illustration of irrational behaviour #4

Klout

- a. Klout is an Internet-based company that promises to measure the social impact that people have in this world ("Klout measures your influence based on your ability to drive action on social networks", [Klout](#) webpage, 28 Sept. 2012)
- b. A Klout score from 1 to 100 is attributed to every single individual on the planet that the company can get hold of, based on automatic extraction of information from social networks (mainly Facebook and Twitter: "[t]he Klout Score incorporates more than 400 signals from seven different networks", [Klout](#) webpage, 28 Sept. 2012).
- c. Customers such as head hunters or human resource managers pay in order to access the Klout score of people they may hire, and they do that for exactly the same reasons that lead politicians and ministry-technocrats to push the Shanghai-button: they are incompetent, they have no time and they do not want to bother doing the evaluation themselves – somebody else has done the work already.
- d. Unlike the Shanghai authors who explain how their ranking was built, the Klout algorithm is secret: nobody knows what exactly is counted, how factors are weighted etc. Given Klout's commercial success, visibly this does not prevent supposedly rational people from using the opaque Klout score for making decisions.

==>

A ranking that exists will be used, no matter whether it is arbitrary or not.

- (18) our decision makers
this is all irrational behaviour in our supposedly rational, academic world where actors have all benefitted from super-high education – but this is how things work, or rather, how humans work.

5. Utilitarianism – serve the market and society or go to hell

- (19) intellectual decline
- a. technology and data are confused with science.
 - b. Rather than stemming from scientists (who however accommodate themselves in the new market-driven environment without too much mourning), this confusion is deliberate, organized and imposed by political decision makers.
 - c. These do not belong to individual countries, but to larger entities like the European Community and its tentacular sub-organizations, or the so-called Bologna Process (dating back to 1999, currently 47 countries adhering).
 - d. A common feature of all these is that the acting individuals are elected by nobody: they are anonymous technocrats whose proposals are never discussed in public before they are applied by individual governments or groupings thereof. An example is the [OECD](#) (Organization for Economic Cooperation and Development), whose slogan is "better politics for better lives", which has played an important role in what Nicolas Sarkozy called the "piloting of science", i.e. the idea that higher education and research are only legitimate if they respond either to demands of the market or of society.
 - e. ==>
The transformation of universities into simple institutions that produce the human material needed by "the market" in order to run capitalism is in full swing.
- (20) ambient utilitarianism and project-hysteria
- a. in the current social and institutional landscape, many people believe, overtly or tacitly (or without being aware that they do), that research (and especially a "project") which involves the building of a corpus coupled with exploitation by a "powerful" computer programme (or even better: *surpuissant* in French), is more serious than a research that does not.
 - b. some even believe that the purpose of a research project may be the creation of a corpus or other "deliverables", and that the corpus (together with the computational power of the search engine) will produce science by itself, i.e. substitute itself to reasoning and the data-expectation dialectic.
==> This is where technology stops being a tool, i.e. where the system goes mad.

6. Conclusion: empiricist roll-back

- (21) research under control
- a. deliberate confusion
 - 1. of data and theory
 - 2. of science and engineering
 - b. research is only legitimate if it serves the market or society
 - c. pilotage de la recherche
research must be
 - under utilitarian control
 - under the control of the market

==> researchers must not be free to spend their time on what they believe is important
 - d. the instrument: money
the project: reduce science to the market
 - e. like in real life
when people are under economic control, you can let them play with their democratic toys, the result is known in advance.
 - 1. States
debts must be paid back no matter who is elected. All leaders, right, left, up, down, green, yellow etc. will be forced into "structural reforms", which is newspeak for destroying all (social) barriers that impede capitalism.
 - 2. Universities
 - you make them "autonomous",
 - you cut regular funding
 - they starve
 - and then you offer fresh money through "projects" = utilitarianismsee how long presidents resist telling their researchers to get projects in.
 - f. in former communist countries
research was also under control. In the interest of society. Same utilitarianism, only that the definition of what helps society was different.

==> the system was more honest: it didn't take the detour through economic control.
- (22) general empiricist roll-back
- a. since the wall came down:
"the end of history" (Francis Fukuyama): we have won, capitalism rules until the end of time, so there is no need for ideology anymore.
Ideology = theory.
 - b. economics
post-war: Keynes = dualist
today: monism, the stock market tells you, you have to please Wall Street
 - c. sociology
post-war: structuralism, Lévi-Strauss
today: empirical studies
 - d. urbanism
post-war: structuralism, thinking a city
today: data tell us how to build cities
 - e. psycho-analysis
post-war: in full swing
today: challenged because no good results in therapy (Onfray)

- (23) researchers
- a. the State funds research only since the 19th century
 - b. before, scientists
 1. had a personal fortune (e.g. Descartes)
 2. were covered by Church
 3. or they had a day-time job such as librarian, secretary, teacher of children from noble families, accountant etc., and did their science in their free time (Kepler, Copernicus)
 - c. return to the Middle Ages
researchers need an official day-time job that satisfies utilitarianism, and do what they really want to do at night, on week-ends, in their spare time.
And they try to deviate facilities from their day-time funding.
- (24) the State has betrayed
- a. in the 19th century
States may not have been democratic.
But they were willing to spend money on science, i.e. to gain insight into how nature works.
This implied of course that there was no tutoring of academia: only academia knows what needs to be researched.
 - b. all States
 1. have a legitimate interest in developing and helping society.
 2. spend money on that – that's engineering
 - c. the modern (deliberate) corruption
is to systematically have science and engineering compete for funding: the goal "gain insight" does not exist anymore, the only goal pursued today is utilitarian.
This is new, and this drives human curiosity back to where it was until the 19th century: into private life.

Appendix (in case there is time left)

Datum and Exemplum: an inclusive relationship, not an opposition

- (25) datum vs. exemplum
Laks (2008, Ms 2011, Ms 2012), discussion in Scheer (2013)
- a. in recent years, Bernard Laks has argued for a distinction between two kinds of data, the *datum* and the *exemplum*.
 - b. he holds that generative linguistics, broadly speaking, are an ill-inspired exemplum-interlude ("armchair linguistics") in serious scientific endeavour.
 - c. serious work in linguistics was always based on datum, and the field has blessedly returned to this perspective since the turn of the 21st century
 - d. according to Laks, the watershed line is Zellig Harris' *Methods in Structural Linguistics* (Harris 1951): this is when serious datum-linguistics were replaced by untrustworthy exemplum-armchair-generativism.

- e. this division does not make sense:
 - 1. conceptually
datum and exemplum is nothing that can be opposed: exemplum is the logical step in the construction of knowledge that follows the acquisition of the datum, and is based on it.
step one: datum
step two: exemplum
 - 2. empirically
there is serious empirical work after 1951, and non-serious empirical work before 1951.
- (26) on the conceptual side:
meaning of the word *example*
 - a. the word *example* does not refer to just a few items of evidence (as opposed to a large empirical record on the datum side), as Laks implies.
 - b. trivially, examples are *exemplary*:
they sure refer to only a few items of evidence, but the author who quotes them takes on the responsibility that these items are representative of the full empirical record.
 - c. if this promise is not brought home, the author has done a bad job – but this does not tell us anything about whether or not quoting examples is a good or a bad thing to do.
 - d. examples exist in order not to drown the audience in a useless and never ending flow of repetitive data: a few representatives of each significant class or pattern are shown.
 - e. examples are logically based on a larger pool of data, and they suppose an *analysis* over this data pool:
 - 1. patterns need to be identified
 - 2. their relevance and significance needs to be established
 - f. \implies the data pool by itself may be amorphous, but examples are not: they are the result of reasoning, analysis, theory.
And they facilitate the work of everybody:
 - 1. of the analyst, who knows where the problems lie and what needs to be accounted for.
 - 2. of the audience, which is given the same information by means of a few data items.
 - g. three-step procedure:
 - 1. input: real-world items
output: data
 - 2. input: data
output: examples (patterns)
 - 3. input: examples (patterns)
output: theory \implies all three steps involve decisions of the analyst
 - h. no opposition between datum and exemplum
 - 1. hence there is no difference between practice A which is not serious because it bases theories on a few pieces of data only, and practice B which is serious because it builds on the full empirical record.
 - 2. there is only a difference between solid and non-solid empirical work.
 - 3. and, secondarily, there is a difference between work that discusses relevant pieces of data that have been cautiously chosen and represent whatever is significant, and work that reviews endless streams of amorphous data.

- (27) on the empirical side I
solid datum-based work after 1951
- a. it is obviously not the case that no solid empirical work was done by generative linguists, or after 1951.
 - b. making such a claim is not doing justice to thousands of linguists who have filled up endless notepads while doing fieldwork, or who have built extensive databases that try to be exhaustive in a specific area.
- (28) on the empirical side II
non-solid empirical work before 1951
- a. a famous case in point is a 1942 paper by Martin Joos (Joos 1942), which reports the existence of a "dialect B" in Canadian English regarding a phenomenon called Canadian Raising.
 - b. Joos' article is three pages long and was published in *Language*; it is based on a few words collected, as the author says, in a highschool classroom.
 - c. Joos' data have made an important career, since they were uncritically quoted, taken over and spread by generativists: in 1989 they came out as Bromberger & Halle's (1989) key witness showing that phonological computation executes instructions in a chronological order (ordered rules).
 - d. the trouble is that there is no evidence independent from Joos' three pages that dialect B has never existed: in the 1970s, Canadian dialectologists could not find any trace of it.
 - e. Kaye (1990) therefore concludes that
 1. either all speakers of this dialect died out naturally before the age of 40,
 2. or that using this particular rule order is lethal.
 - f. dialect B is thus a case where a whole field was taken hostage by
 1. a structuralist who did bad empirical work before 1951
 2. generativists who gullibly repeated bad data without checking them.
- (29) on the empirical side III
non-solid empirical work before 1951
- a. Trubetzkoy's (1939) *Grundzüge* is another famous case of exemplum-based reasoning, by a structuralist and before 1951.
 - b. the author almost exclusively quotes second hand evidence from languages that he does not know and has never worked on,
 - c. and he typically does not quote a few, but **zero** words or items:
vocalic systems are reported based on descriptive literature without quoting a single word of the language in question (e.g. p.111f for the Central Chinese dialect of Siang-tang).
 - d. Trubetzkoy did the best he could:
 1. he used the data that were available to him, and he used only those that he judged reliable (discussion is often provided regarding this issue).
 2. he may have been, and surely was, wrong on a number of occasions, when his sources turned out not to be reliable.
 3. this way of browsing a large number of languages (210 are mentioned in the language index) is the structuralist version of what is called a generative corpus below.

References

References followed by the mention WEB can be downloaded at <http://www.unice.fr/scheer>.

- Bromberger, Sylvain & Morris Halle 1989. Why Phonology Is Different. *Linguistic Inquiry* 20: 51-70.
- Feyerabend, Paul 1976. *Wider den Methodenzwang*. Frankfurt am Main 1986: Suhrkamp.
- Harris, Zellig 1951. *Methods in Structural Linguistics*. Edition 1960 entitled *Structural Linguistics*. Chicago & London: University of Chicago Press.
- Joos, Martin 1942. A phonological dilemma in Canadian English. *Language* 18: 141-144.
- Kaye, Jonathan 1990. What ever happened to dialect B ? *Grammar in Progress: GLOW Essays for Henk van Riemsdijk*, edited by Joan Mascaró & Marina Nespó, 259-263. Dordrecht: Foris.
- Kuhn, Thomas 1962. *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Laks, Bernard 2008. Pour une phonologie de corpus. *Journal of French Language Studies* 18: 3-32.
- Laks, Bernard Ms (2011). Pourquoi y a-t-il de la variation plutôt que rien ?
- Laks, Bernard & Basilio Calderone Ms (2012). French liaison and the lexical repository.
- Scheer, Tobias 2013. The corpus: a tool among others. CORELA (numéros thématiques) <http://corela.edel.univ-poitiers.fr/index.php?id=2952>.
- Trubetzkoy, Nikolai Sergeyevich 1939. *Grundzüge der Phonologie*. 6th edition 1977, Göttingen: Vandenhoeck & Ruprecht.