vironment) in deter-
aits has been pro-
acrimonious. Great
d in it over the last
philosophers John
Hobbes, and scien-
, Richard Lewontin,
on. The problem is
bate has proceeded
ther a simplistically
of the question, or
evant empirical evi-
ersy has in fact largely
it comes to plants
animals. Unfortu-
ophers are not aware
hich has taken place
discipline of evolu-
On the other hand,
ep focusing on the
nans which – while
st interesting – has
the most recalcitrant
is and the most open
quiry.

to say that humans
igated their own na-
inly done so since the
hilosophy, modern
ssue of nature/nur-
ss clearly be traced to
o English philoso-
cke and Thomas
1632-1704) was the
hool known as em-
at knowledge can be
ugh the use of the
d to rationalism, ac-
the mind can derive
on logical grounds.

these fundamental assumptions.

Thomas Hobbes (1588-1679) espoused a different notion. In his books, and particularly in the famous *Leviathan* he proposed that mechanical processes control human actions, which are innately fearful and violent. Consequently, the only hope for humans is to submit entirely to an organised state (and religious authority), so to be forced to live in a reasonable way. This is not a far cry from the right-wing politics implicitly or explicitly adopted by some social scientists involved in the modern debate, such as Arthur Jensen, R J Herrnstein, and C Murray.

Of course, modern philosophers and scientists readily acknowledge that human traits are in fact the result of both nature and nurture, but they are usually also quick to add that one of these two components takes precedence. For example, Gould, Lewontin and others think that the environment is the major determinant of human nature. Their position could hardly be summarised more concisely than by the title of one of Lewontin's books, *Not in Our Genes*. If the causes of intelligence, aggression, or whatever other aspect of our behaviour are not in our genes, they must surely be found in the environment. On the other side of the divide, Jensen, Herrnstein, Murray, Wilson (albeit in a category of his own) and many others are convinced that genetics and natural selection have shaped the physical as well as mental characteristics of all living beings, including humans. When Murray suggests (in the title of one of his arti-

ing with, but as o
publicly criticised
on our side again
an esteemed Brit
the emotional st
than in your typic

A solution to
problem has beer
ginning of the 20
troduction in evo
the concept of 'n
put, a reaction n
possible morpho
that a living organ
can exhibit when
ety of environmen
gists have quickly
one changes *either*
ronment, the resu
dramatically diffe
not in partitionin
ture and nurture,
cally known as 'g
interactions', the
ronments interac
are an organism's
iour. This dialec
duces different o
or environments
cise shape of a re
be found empiric

The concept o
dealt a fatal blow
nurture discussio
century: the muc
depending on th
'heritability' of a
read in newspape
technical papers)
say, intelligence
what have you) i

ot imply rigid de-
reaction norms
sms have shown
the limits of what
t that within such
'plasticity' of the
o respond to dif-
challenges -- can

best examples of
between nature
in classic experi-
looper and Zubek
compared 'intel-
by the ability to
nning through a
ly distinct lines of
selected for high
aze ('bright' rats),
arly low perform-
an reared under a
at, comparable to
selection process
s showed a highly
their abilities (i.e.,
the trait). Cooper
, also reared indi-
nes in two other
ation in which the

capable conclusion is that maze-running ability in rats is very plastic, and that different genes may lead to similar behaviours depending on environmental conditions.

So, why is there still such an acrimonious debate among philosophers and scientists about nature and nurture in humans? Because for both technical and ethical reasons we simply cannot perform on ourselves the sort of clear-cut experiments that Cooper and Zubek carried out on rats. Not only do humans have a very long life span and encounter very complex environments during their typical lifetime, but it is obviously unacceptable to experimentally breed human beings and control their environment for the sole purpose of scientific or philosophical investigation (or for any purpose, most would argue).

Unfortunately, this means that we are left with no sensible answer to a crucial question. Our educational policies, for example, may be more or less fruitful depending on the precise shape of human reaction norms. The same can be said for policies concerned with curbing crime, or for a host of other fundamen-

tendency in a remark
ion. The fact remai
there are -- and alwa
questions that science
ther at the moment,
Richard Lewontin
similar context: "I m
lesson our readers ca
the childish notion
is interesting about
derstood. ... It migh
know how cognition
arose and spread an
cannot know. Tough

Learning to live w
actually empowers th
by not pretending to
can enjoy the fruits
tive tool humans ha
understand the wor
cally, this leaves amp
phers in crucial areas
and its ethical conse
science must be silen
matter we are oblige
how the world ough
on how it currently

Massimo Pigliu