



### 13-1 social lives of humans /not unique

What characterizes the social lives of humans is the intense interest we show in each other's doings. We spend literally hours in each other's company, stroking, touching, talking, murmuring, being attentive to every detail of who is doing what with whom. You might think that this marks us out as a cut above the rest of life, but you would be wrong. If we have learned anything from the last thirty years of intensive research on monkeys and apes, it is that we humans are anything but unique. **Monkeys and apes are just as social as we are, just as intensely interested in scores of social activities around them.**

#### ✓ Translation

인간의 사회적 생활을 특징짓는 것은 우리가 서로의 행동에 대해 보이는 깊은 관심이다. 우리는 쓰다듬고, 만지고, 얘기하고, 속삭이고, 누가 누구와 무엇을 하고 있는지 모든 세세한 것에 신경을 쓰면서 말 그대로 몇 시간이고 서로 함께 보낸다. 여러분은 이것이 우리 인간을 다른 생명체보다 더 나은 존재로 특징짓는 것이라고 생각할 수 있지만 그것은 틀린 생각일 것이다. 우리가 원숭이와 유인원에 대한 지난 30년 동안의 집중 연구에서 무엇인가를 배웠다면 그것은 우리 인간이 전혀 특별하지 않다는 것이다. 원숭이와 유인원은 우리만큼 사회적이고, 자기 주변의 많은 사회 활동에 우리만큼 깊은 관심을 가지고 있다.

#### ✓ Note





## ✓Voca

- characterize 특징짓다
- literally 말[문자] 그대로
- in one's company ~와 함께
- stroke 쓰다듬다
- murmur 속삭이다
- attentive 신경을 쓰는, 주의를 기울이는
- a cut above ~보다 나은
- ape 유인원
- anything but 결코 ~이 아닌
- verbal 언어의, 말의
- scale 척도, 기준
- scores of 많은, 수십의

## ✓해변

What characterizes the social lives of humans is the intense interest we show in each other's doings. We spend literally hours in each other's company, stroking, touching, talking, murmuring, being attentive to every detail of who is doing what with whom. You might think that this marks us out as a cut above the rest of life, but you would be wrong. If we have learned anything from the last thirty years of intensive research on monkeys and apes, it is that \_\_\_\_\_. Monkeys and apes are just as social as we are, just as intensely interested in scores of social activities around them.

- ① we are the only social life on earth
- ② we humans are anything but unique
- ③ monkeys and apes have a strong instinct to learn
- ④ all kinds of animals on the planet have social lives
- ⑤ monkeys and humans have some biological traits in common

## ✓Reminding

What characterizes the social lives of humans is the intense interest we show in each other's doings. We spend literally hours in each other's company, stroking, touching, talking, murmuring, being attentive to every detail of who is doing what with whom. You might think that this marks us out as a cut above the rest of life, but you would be \_\_\_\_\_. If we have learned anything from the last thirty years of intensive research on monkeys and apes, it is that we humans are \_\_\_\_\_. Monkeys and apes are just as social as we are, just as intensely interested in scores of social activities around them.





## 13-2 American hospitals / not safe

American hospitals aren't as dangerous as Kenyan minibuses, but they're far less safe than you'd think. Each year, about 1 out of every 20 hospitalized patients contracts an infection in a U.S. hospital, and the resulting toll is very surprising: 99,000 annual deaths and a yearly cost of upward of \$40 billion. The most cost-effective way to prevent these infections is for doctors, nurses, and other health care professionals to regularly wash their hands. But the frequency of hand washing in U.S. hospitals is astonishingly low. And many of the efforts to get more people washing their hands more often have been sadly ineffective.

### ✓ Translation

미국 병원은 케냐의 소형 버스만큼 위험하지는 않지만, 여러분이 생각하는 것보다 훨씬 덜 안전하다. 매년, 미국의 한 병원에서 20명의 입원 환자 중 약 1명꼴로 감염증에 걸리고 그 결과로 초래되는 사상자 수는 매우 놀라울 정도인데, 매 년 9만 9천 명이 사망하고 연간 4백억 달러가 넘는 비용이 발생한다. 이러한 감염증을 예방할 수 있는 가장 비용 효율적인 방법은 의사, 간호사, 그리고 다른 의료전문가들이 자신의 손을 정기적으로 씻는 것이다. 하지만 미국 병원에서 손을 씻는 빈도는 놀라울 정도로 낮다. 그리고 더 많은 사람이 자신의 손을 더 자주 씻게 하고자 하는 많은 노력들이 안타깝게도 효과가 없었다.

### ✓ Note





## ✓Voca

- hospitalize 입원시키다
- contract (병에) 걸리다
- infection 감염증, 감염
- resulting 결과로 초래되는
- yearly 연간의
- upward of ~보다 많이, 거의
- cost-effective 비용 효율적인
- frequency 빈도
- astonishingly 놀라울 정도로
- sadly 안타깝게도
- ineffective 효과적이지 못한

## ✓해변

American hospitals aren't as dangerous as Kenyan minibuses, but they're far less safe than you'd think.

(A) The most cost-effective way to prevent these infections is for doctors, nurses, and other health care professionals to regularly wash their hands.

(B) But the frequency of hand washing in U.S. hospitals is astonishingly low. And many of the efforts to get more people washing their hands more often have been sadly ineffective.

(C) Each year, about 1 out of every 20 hospitalized patients contracts an infection in a U.S. hospital, and the resulting toll is very surprising: 99,000 annual deaths and a yearly cost of upward of \$40 billion.

## ✓Reminding

American hospitals aren't as \_\_\_\_\_ as Kenyan minibuses, but they're far less \_\_\_\_\_ than you'd think. Each year, about 1 out of every 20 hospitalized patients \_\_\_\_\_ an infection in a U.S. hospital, and the resulting toll is very surprising: 99,000 annual deaths and a yearly cost of upward of \$40 billion. The most cost-effective way to prevent these infections is for doctors, nurses, and other health care professionals to regularly wash their hands. But the frequency of hand washing in U.S. hospitals is astonishingly \_\_\_\_\_. And many of the efforts to get more people washing their hands more often have been sadly ineffective.





### 13-3 compassion is not morality

We can see the occasional clash between compassion and morality in the lab. Experiments by the psychologist C. Daniel Batson and his colleagues find that being asked to adopt someone else's perspective makes participants more likely to favor that person over others. For example, they are more prone to move a suffering girl ahead of everyone else on a waiting list for a lifesaving procedure. This is compassionate, but it's not moral, since this sort of decision should be based on objective and fair procedures, not on who causes the most intense emotional reaction. **Part of being a good person, then, involves overriding one's compassion, not cultivating it.**

#### ✓ Translation

우리는 실험실에서 때때로 동정심과 도덕이 충돌하는 것을 볼 수 있다. 심리학자 C. Daniel Batson과 그의 동료들은 실험에서 다른 어떤 사람의 관점을 취하라고 요구받은 참여자들이 다른 사람보다 그 특정인에게 더 호의를 보이는 경향이 있다는 것을 발견한다. 예를 들어, 실험 참여자들은 구명 절차를 위한 대기명단에서 고통스러워하는 소녀를 다른 어느 누구보다 먼저 옮기는 경향을 보인다. 이러한 종류의 결정은 누가 가장 강렬한 감정반응을 불러 일으키는가가 아니라 객관적이고 공정한 절차에 근거해야 하는 것이기 때문에 이것은 동정적인 것이지만 도덕적인 것은 아니다. 그래서 좋은 사람이 된다는 것은 부분적으로는 자신의 동정심을 함양하기보다는 무시하는 것을 포함한다.

#### ✓ Note





## ✓Voca

- |                             |                                |
|-----------------------------|--------------------------------|
| • clash 충돌                  | • moral 도덕적인                   |
| • compassion 동정심, 연민        | • be based on ~에 근거하다, ~에 기초하다 |
| • morality 도덕, 도덕성          | • objective 객관적인               |
| • colleague 동료              | • end 목적                       |
| • adopt 취하다, 택하다            | • humanity 인간애, 인류             |
| • favor 호의를 보이다, 선호하다       | • override 무시하다, 기각하다          |
| • compassionate 동정하는, 연민 어린 | • cultivate 함양하다, 경작하다         |

## ✓해변

We can see the occasional clash between compassion and morality in the lab. Experiments by the psychologist C. Daniel Batson and his colleagues find that being asked to adopt someone else's perspective makes participants more likely to favor that person over others. For example, they are more prone to move a suffering girl ahead of everyone else on a waiting list for a lifesaving procedure. This is compassionate, but it's not moral, since this sort of decision should be based on objective and fair procedures, not on who causes the most intense emotional reaction. Part of being a good person, then, involves \_\_\_\_\_.

- ① being a compassionate person sincerely
- ② giving the first priority to helping others
- ③ overriding one's compassion, not cultivating it
- ④ making good decisions in emergency situations
- ⑤ being beyond the conflict between morality and objectivity

## ✓Reminding

We can see the occasional clash between compassion and morality in the lab. Experiments by the psychologist C. Daniel Batson and his colleagues find that being asked to adopt someone else's perspective makes participants more likely to favor that person over others. For example, they are more prone to move a suffering girl ahead of everyone else on a waiting list for a lifesaving procedure. This is \_\_\_\_\_, but it's not \_\_\_\_\_, since this sort of decision should be based on objective and fair procedures, not on who causes the most intense emotional reaction. Part of being a good person, then, involves overriding one's compassion, not \_\_\_\_\_ it.





### 13-4 Native American / group-oriented culture

Children of Native American parents are traditionally socialized through an extensive **network of relatives**. Along with grandparents, uncles and aunts participate with parents in child care, supervision of children, and assurance of love, and cousins are thus considered as close as siblings. Members of this extended family also teach children their tribal values and beliefs along with traditions and rituals. **Reflecting a group-oriented culture, the values of cooperation and sharing are emphasized, while competitive behavior is discouraged.** Children and adolescents are further encouraged to participate in tribal ceremonies and develop an appreciation for their cultural heritage.

### ✓ Translation

아메리카 원주민 부모에게서 태어난 아이들은 전통적으로 넓은 친족 망을 통해 사회화된다. 조부모와 함께, 삼촌들과 숙모들이 부모와 함께 보육, 아이 관리, (아이들에게) 확실한 사랑을 보여주는 활동에 참여 하고, 따라서 사촌들은 형제자매들만큼이나 가깝다고 여겨진다. 이 대가족의 구성원들은 또한 아이들에게 전통과 의례와 함께 자기 부족의 가치와 신념을 가르친다. 집단 지향적인 문화를 반영한 협동과 공유의 가치가 강조되는 반면, 경쟁적인 행동은 저지된다. 아이들과 청소년들은 더 나아가 부족의 의식에 참여하여 자신들의 문화적 유산에 대해 제대로 이해하도록 장려된다.

### ✓ Note





## ✓Voca

- socialize 사회화하다
- extensive 넓은
- relative 친족, 친척
- along with ~와 함께
- supervision 관리, 감독
- assurance 보장
- sibling 형제자매
- extended family 대가족
- tribal 부족의
- ritual 의례, 의식 절차
- reflect 반영하다
- group-oriented 집단 지향적인
- ethnic 종족의, 민족의
- mixture 혼합물
- further 더 나아가
- appreciation 제대로 된 이해
- heritage 유산

## ✓해변

Children of Native American parents are traditionally socialized through an (A) extensive / narrow network of relatives. Along with grandparents, uncles and aunts participate with parents in child care, supervision of children, and assurance of love, and cousins are thus considered as close as siblings. (B) Rejecting / Reflecting a group-oriented culture, the values of cooperation and sharing are emphasized, while competitive behavior is discouraged. As a result, one-third of all Native Americans who marry outside their ethnic group have adopted either white values completely or mixture of white and traditional values. Children and adolescents are further encouraged to participate in tribal ceremonies and develop an (C) appreciation / contempt for their cultural heritage.

## ✓Reminding

Children of Native American parents are traditionally socialized through an \_\_\_\_\_ network of relatives. Along with grandparents, uncles and aunts participate with parents in child care, supervision of children, and assurance of love, and cousins are thus considered as \_\_\_\_\_ as siblings. Reflecting a \_\_\_\_\_ culture, the values of cooperation and sharing are \_\_\_\_\_, while competitive behavior is \_\_\_\_\_. As a result, one-third of all Native Americans who marry outside their ethnic group have adopted either white values completely or mixture of white and traditional values. Children and adolescents are further encouraged to participate in tribal ceremonies and develop an \_\_\_\_\_ for their cultural heritage.





### 13-5 information technologies / ambivalent

History shows that new communications technologies strengthen some forms of interpersonal communication while disrupting others. The advent of the Internet has the potential for bringing about a situation in which everyone is our neighbor in a small, electronically mediated global village. The virtual communities that have formed on the Internet are an initial indication that new types of human relationships may be created. However, there is also the danger that the world could evolve into an extremely divided postmodern society in which chaos dominates. Information technologies may also lower the sense of social presence we experience when we talk to people face to face.

#### ✓ Translation

역사는 새로운 통신 기술이 어떤 형식의 개인 간 의사소통은 강화하지만 다른 형식에는 지장을 준다는 것을 보여 준다. 인터넷의 출현은 작고, 전자적으로 매개되는 지구촌 안에서 모든 사람이 이웃이 되는 상황을 가져올 잠재력을 가지고 있다. 인터넷상에 형성된 가상 사회는 새로운 유형의 인간관계가 만들어질 수도 있다는 최초의 징후이다. 하지만 세계가 대혼란이 지배하는 극단적으로 분할된 포스트모던 사회로 발전할 수도 있는 위험 또한 있다. 정보 기술은 또한 우리가 사람들과 서로 얼굴을 맞대고 이야기할 때 경험하는 사회적 존재감을 저하시킬 수도 있다.

#### ✓ Note





## ✓Voca

- strengthen 강화하다
- interpersonal 개인 간의
- advent 출현, 도래
- bring about ~을 가져오다, ~을 초래하다
- mediate 매개하다
- initial 초기의, 처음의
- indication 징후, 징조
- convenience 편의
- enterprise 기업
- dominate 지배하다
- face to face 서로 얼굴을 맞대고

## ✓해변

History shows that new communications technologies strengthen some forms of interpersonal communication while disrupting others.

(A) The advent of the Internet has the potential for bringing about a situation in which everyone is our neighbor in a small, electronically mediated global village.

(B) However, there is also the danger that the world could evolve into an extremely divided postmodern society in which chaos dominates. Information technologies may also lower the sense of social presence we experience when we talk to people face to face.

(C) The virtual communities that have formed on the Internet are an initial indication that new types of human relationships may be created.

## ✓Reminding

History shows that new communications technologies strengthen \_\_\_\_\_ forms of interpersonal communication while disrupting \_\_\_\_\_. The advent of the Internet has the \_\_\_\_\_ for bringing about a situation in which everyone is our neighbor in a small, electronically mediated global village. The virtual communities that have formed on the Internet are an initial indication that new types of human relationships may be created. However, there is also the \_\_\_\_\_ that the world could evolve into an extremely divided postmodern society in which \_\_\_\_\_ dominates. Information technologies may also lower the sense of social presence we experience when we talk to people face to face.





## 13-6 numerical reasoning / visualization

Numerical reasoning becomes easier when you visualize mathematical concepts. Quite famously, Einstein once claimed that his thinking process took place through visualization and that he very rarely thought in words at all. Crucially, brain scans show that during calculations activity is not merely confined to the left hemisphere, but is also present in the visual, auditory, and motor areas of the brain. Furthermore, graph-reading and geometry by their nature require you to use your visual skills to understand complex numerical data, which immediately involves regions of the right temporal lobe. What we do know is that when a math problem is presented visually, it becomes clearer, more accessible, and the brain is more capable of recalling the knowledge later on.

### ✓ Translation

여러분이 수학적 개념을 시각화할 때 수와 관련된 추리는 더 쉬워진다. 상당히 유명한 일인데, Einstein이 언젠가 자신의 사고 과정이 시각화를 통해 일어나며 자신이 언어로는 거의 사유하지 않는다고 주장했다. 결정적으로, 뇌 정밀검사는 계산하는 동안 (뇌의) 활동이 단지 좌뇌에 국한되는 것이 아니라, 뇌의 시각, 청각, 그리고 운동 영역에서도 나타난다는 점을 보여 준다. 게다가, 그래프 읽기와 기하학은 본질적으로 여러분이 복잡한 수 데이터를 이해하기 위해서 시각적 능력을 활용하도록 요구하는데, 그것은 즉시 오른쪽 측두엽의 부위와 관련이 된다. 우리가 정말로 알고 있는 것은, 수학 문제가 시각적으로 제시될 때 그것이 더 명료해지고, 더 접근 가능해지며 뇌가 나중에 그 지식을 더 잘 기억해 낼 수 있다는 것이다.

### ✓ Note





## ✓Voca

- numerical 수와 관련된, 수의
- reasoning 추리, 추론
- visualize 시각화하다
- concept 개념
- crucially 결정적으로
- brain scan 뇌 정밀검사
- hemisphere (뇌의) 반구
- motor 운동의
- geometry 기하학
- by (one's) nature 본질적으로, 천성적으로
- involve 관련시키다
- ongoing 계속적인
- commitment 전념, 헌신
- acknowledge 인정하다
- work through ~을 노력해서 해결하다
- accessible 접근 가능한
- recall 기억해 내다

## ✓해변

Numerical reasoning becomes easier when \_\_\_\_\_. Quite famously, Einstein once claimed that his thinking process took place through visualization and that he very rarely thought in words at all. Crucially, brain scans show that during calculations activity is not merely confined to the left hemisphere, but is also present in the visual, auditory, and motor areas of the brain. Furthermore, graph-reading and geometry by their nature require you to use your visual skills to understand complex numerical data, which immediately involves regions of the right temporal lobe. What we do know is that when a math problem is presented visually, it becomes clearer, more accessible, and the brain is more capable of recalling the knowledge later on.

- ① you look at the problem in detail
- ② you visualize mathematical concepts
- ③ you actively make use of all senses
- ④ you develop your creativity to the extreme
- ⑤ you memorize the whole content completely

## ✓Reminding

Numerical reasoning becomes \_\_\_\_\_ when you \_\_\_\_\_ mathematical concepts. Quite famously, Einstein once claimed that his thinking process took place through \_\_\_\_\_ and that he very rarely thought in words at all. Crucially, brain scans show that during calculations activity is not merely confined to the left hemisphere, but is also present in the visual, auditory, and motor areas of the brain. Furthermore, graph-reading and geometry by their nature require you to use your visual skills to understand complex numerical data, which immediately involves regions of the \_\_\_\_\_ temporal lobe. What we do know is that when a math problem is presented visually, it becomes clearer, more accessible, and the brain is more capable of recalling the knowledge later on.





### 13-7 child's diet / right kind of fat

While fat is essential to any child's diet, the type of fat does make a difference. A lot of research has looked into the role of fat in health, and while choosing better fats is more critical for adults who need to worry about chronic diseases, making a healthy start with the best fats is also important for children. The developing bodies of children have different fat requirements than adults, because fats are used in constructing new tissues. **At the same time, establishing good habits by avoiding excess fat (especially saturated and trans fats) is important for a child's future health.** While infants and young toddlers need more fat in their diet, children over two or three years of age should start eating the kinds of healthy fats that are recommended for adults.

### ✓ Translation

지방이 어떤 어린이의 식단에도 필수적인 것이지만, 지방의 종류는 정말 중요한 영향을 미친다. 건강에서 차지하는 지방의 역할에 대해 조사한 연구가 많은데 더 좋은 지방을 선택하는 것이 만성 질환에 대해 걱정해야 할 필요가 있는 어른들에게 더 중요하지만 가장 좋은 지방으로 건강에 이로운 시작을 하는 것은 어린이들에게도 중요하다. 어린이의 성장하는 신체는 어른과는 다른 지방의 필요치가 있는데, 이는 지방이 새로운 조직을 만드는데 사용되기 때문이다. 하지만 그와 동시에, 필요한 정도를 초과한 지방(특히 포화 지방과 트랜스 지방)을 피해 좋은 습관을 들이는 것이 아이의 미래 건강에 중요하다. 젓먹이와 걸음마를 배우는 어린 아이는 식단에 더 많은 지방이 필요하지만, 두세 살을 넘긴 어린이는 어른에게 권장되는 건강에 좋은 종류의 지방을 섭취하기 시작해야 한다.

### ✓ Note





## ✓Voca

- critical 대단히 중요한, 비판적인
- chronic disease 만성 질환
- nutrient 영양소, 영양분
- requirement 필요(한 것)
- tissue 조직
- establish 확립하다
- excess (필요한 정도를) 초과한
- trans fat 트랜스 지방
- infant 젖먹이
- recommend 권장하다, 추천하다

## ✓핵심

While fat is essential to any child's diet, the type of fat does make a difference. A lot of research has looked into the role of fat in health, and while choosing better fats is more critical for adults who need to worry about chronic diseases, making a healthy start with the best fats is also important for children. The developing bodies of children have different fat requirements than adults, because fats are used in constructing new tissues. At the same time, establishing good habits by avoiding excess fat (especially saturated and trans fats) is important for a child's future health. While infants and young toddlers need more fat in their diet, children over two or three years of age should start eating the kinds of healthy fats that are recommended for adults.

- ① everything about fat for adults to know
- ② importance of good start in children's diet
- ③ roles of adults in making a child's future health
- ④ ways to teach children good habits during meals
- ⑤ necessity for choosing right kind of fat for children

## ✓Reminding

While fat is essential to any child's diet, the \_\_\_\_\_ of fat does make a difference. A lot of research has looked into the role of fat in health, and while choosing better fats is more critical for adults who need to worry about chronic diseases, making a healthy start with the best fats is also important for children. The developing bodies of children have different fat requirements than adults, because fats are used in constructing new tissues. At the same time, establishing good habits by avoiding excess fat (especially saturated and trans fats) is important for a child's future health. While infants and young toddlers need more fat in their diet, children over two or three years of age should start eating the kinds of healthy fats that are recommended for adults.





### 13-8 not population but way

Global warming has been driven by the enormous growth in energy use which has gone hand in hand with the rise in human population over the last half century in particular. **Yet it's the way energy is used that is a problem, not the sheer number of people.** In fact, quite a small proportion of people in the developed world are responsible for the massive energy consumption that has started the global warming ball rolling. Most of the world's population has played very little part as yet. So even a dramatic fall in the world's population would not necessarily ease the problem of global warming - unless the remaining few changed their consumption patterns. And a rise in the world population does not necessarily have to bring further global warming.

### ✓ Translation

지구 온난화는 특히 지난 반세기 동안의 인구 증가와 밀접한 관련이 있어 왔던 에너지 사용의 막대한 증가에 의해 심화되어 왔다. 그러나 문제가 되는 것은 순전히 인구수가 아니라 에너지가 사용되는 방식이다. 사실 선진국의 아주 소수의 사람들이 지구온난화라는 공이 굴러가게 시동을 건 대규모의 에너지 소비에 책임이 있다. 세계 인구의 대부분은 아직까지는 거의 역할을 하지 않았다. 그러므로 세계 인구의 극적인 감소가 있다고 하더라도 만약 남아 있는 극소수의 사람들이 자신들의 소비 행태를 바꾸지 않는다면 지구온난화 문제가 반드시 완화되지는 않을 것이다. 그리고 세계 인구의 증가가 지구온난화를 반드시 더 심화시키는 것도 아니다.

### ✓ Note





## ✓Voca

- enormous 막대한, 엄청난
- growth 증가, 성장
- go hand in hand with ~와 밀접한 관련이 있다
- in particular 특히
- sheer 순전한
- proportion 비율, 부분
- be responsible for ~에 책임이 있다
- massive 대규모의, 엄청나게 큰
- consumption 소비
- expert 전문가
- cautiously 조심스럽게
- fast-growing 빨리 성장하는
- emission 배출
- fall 감소, 하락
- ease 완화시키다, 편하게 하다

## ✓해변

Global warming has been driven by the enormous growth in energy use which has gone hand in hand with the rise in human population over the last half century in particular. Yet it's the way energy is used that is a problem, \_\_\_\_\_. Most of the world's population has played very little part as yet. Experts cautiously predict that fast-growing developing countries like China and India will contribute more than half of global CO2 emission by 2050. So even a dramatic fall in the world's population would not necessarily ease the problem of global warming - unless the remaining few changed their consumption patterns. And a rise in the world population does not necessarily have to bring further global warming.

- ① not the sheer number of people
- ② as well as the countries using the energy
- ③ and the amount of remaining energy resources
- ④ not the prospect of industries making emissions
- ⑤ just as the consciousness people have about energy

## ✓Reminding

Global warming has been driven by the enormous growth in energy use which has gone hand in hand with the rise in human \_\_\_\_\_ over the last half century in particular. Yet it's the way energy is used that is a problem, not the sheer \_\_\_\_\_ of people. Most of the world's population has played very \_\_\_\_\_ part as yet. Experts cautiously predict that fast-growing developing countries like China and India will contribute more than half of global CO2 emission by 2050. So even a dramatic fall in the world's population would not necessarily ease the problem of global warming - unless the remaining few changed their consumption \_\_\_\_\_. And a rise in the world population does not necessarily have to bring further global warming.

